Featuring:
8 Type-In
Programs

U.S.A. $3.50
CANADA $4.50

Antic®

The ATARI® Resource

JUNE 1987 VOLUME 6, NUMBER 2

JUMP INTO ANIMATION
New series shows you how!



Battle of the BASICs
Which one's best for your XL/XE?

Reviews:
Chessmaster 2000
Aegis Animator
GFA Basic

WHITE HOUSE COMPUTER

P.O. BOX 4025 • WILLIAMSPORT, PA 17701

Free shipping on all Visa, MasterCard and cash orders over $50 in continental U.S.A.

— COMPUTERS —

800 XL	$ 79
65 XE	89
130 XE	139
520 ST Mono	CALL
520 ST RGB	CALL
1040 ST MON	CALL
1040 ST RGB	CALL

— MONITORS —

AMDEK

300G	$117
300A	127

ATARI

SM124	$169
SC1224	325

MULTI TECH

13″ Color W/Cable	$165

THOMSON

CM365 Color/RGB/Green W/Cable	$269

MAGNAVOX

Green	$ 75
Amber	85

GOLDSTAR

2015G TTL/Green	$ 99
2015A TTL/Amber	99
4035 13″ 40/C/M/ Color/RGB	285
4015 13″ 40/80 C/M/ Color/RGB	325

SANYO

DMC5500 Color	$169

— PRINTERS —

STAR MICRONICS

NP-10 100 CPS/NLQ30	$179
NX-10	225
NX-10C	235
NX-15	350
Powertype	179
ND-15	445
NR-15	540
NB-15	999

PANASONIC

1080	$209
1080I	220
1091	275
1092	300
3131	259
3151	CALL
1592	CALL

SEIKOSHA

SP1000VC	$169
SP1000A	185
MP1300A 300 CPS/Color/NLQ	625

OKIDATA

Okimate 10	$175
Okimate 20	200
182	219

JUKI

6100	$450
6300	785
6500	995
5510C Color/Printer	465

— PAPER —

WHITE 20 LB. LASER EDGE

2,500 Sheets	$ 26
1,000 Sheets	16
500 Sheets	11

ASSORTED PASTELS LASER EDGE

2,500 Sheets	$ 44
1,000 Sheets	26
500 Sheets	16
1,000 Mailing Labels	9

— DISK DRIVES —

1050	$142
Happy 1050	285
Happy Enhancer	125
Indus GT	185
SF 314	210
SF 354	129
US Doubler	48

— DISKETTES —

FUJI 3½

SS/DD	$ 16
DS/DD	23

TDK 3½

SS/DD	$ 14
DS/DD	21

FUJI 5¼

SS/DD	$ 10
DS/DD	13

TDK 5¼

SS/DD	$ 10
DS/DD	13

3M

SS/DD/W/FtF 15 Holder	$ 10

— SOFTWARE —

8-BIT

BATTERIES INCLUDED

Paper Clip With Spell	$ 41
Home Pak	29

BRODERBUND

Bank Street Writer	$ 31
Karateka	18
Lode Runner	22
Print Shop	28
Print Shop Companion	22
Graphics Library 1, 2 or 3 (Each)	15
Synfile	31
Syncalc	31
Syncalc Template	14

ELECTRONIC ARTS

Chessmaster 2000	$ 25
Movie Maker	22
Music Construction Set	13
One on One	13
Pinball Construction Set	13
Racing Destruction Set	13
Ultima I	22
Ultima III	33
Ultima IV	38

ORDER TOLL FREE
1-800-351-3442

VISA 4%, MASTERCARD 4%, AMERICAN EXPRESS 5%

CUSTOMER SERVICE AND PA RESIDENTS CALL 1-717-322-7700

Ordering and Terms:
Place orders Mon.-Fri. 9 am-6 pm. **Customer service calls taken Mon.-Fri. 10 am-4 pm.** No deposit on C.O.D. orders. Free freight on all prepaid cash orders over $300 in the continental U.S.A. APO and FPO orders add $5 per hundred. Priority mail add $10 per hundred. All foreign orders add 8% for shipping. UPS shipping add $4 per hundred East coast, $5 per hundred West coast. PA residents add 6% sales tax. Free shipping for PA residents. Orders by company and personal checks held three (3) weeks. Defective products require prior return authorization. Defective products will be replaced or repaired according to warranty. **No used or reconditioned products sold. Prices and availability are subject to change without notice. No cash refunds.**

— INTERFACES —

MPP 1150	$ 45
PR Connection	63
PR Modem Cable	11
PR Printer Cable	11
Xetec	39
Micro Stuffer 64K Buffer	69
520ST/IBM Printer Cable	11

— MODEMS —

XMM 301	$ 39
MPP 1000E	39
MPP 1200AT	150
MPP 1200ST	150
Avatex 1200	95
Avatex 1200HC	130
Smart Team 300/1200	140
Compuserve Starter Kit	20

— ACCESS —

Font File, 50 Holders	$ 6
Disk Notcher	4
Dust Covers	CALL
Ribbons Black/Color	CALL
Epyx 5000J Joystick	14
Putts Joystick	7
Wico Joystick	CALL

EPYX

Summer Games	$ 24
World Karate Championship	20

ICD

R Time 8 Cartridge	$ 50
Rambo XL	36
US Doubler	49

INFOCOM

Leather Goddesses of Phobos	$ 26
Moon Mist	26

MICROPROSE

Conflict in Vietnam	$ 23
Crusade in Europe	24
F-15 Strike Eagle	21
Kennedy Approach	21
Silent Service	21
Top Gunner Series	18

OSS

Action	$ 48
Basic XE	48
Basic XL	38
Mac 65	48
Tool Kits	18

SUBLOGIC

Flight Simulator II	$ 31
Night Mission Pinball	21
Scenery Disk	14

ATARI

Atari Writer +	$ 32

520 ST — SOFTWARE —

16-Bit

BATTERIES INCLUDED

Degas	$ 25
Degas Elite	54
Paper Clip Elite	64
Thunder	26

ACTIVISION

Borrowed Time	$ 31
Music Studio	39

ACCESS

Leader Board	$ 25
Tournament Disk	15

ACCOLADE

Mean 18	$ 26

ELECTRONIC ARTS

Chessmaster 2000	$ 30

EPYX

Championship Wrestling	$ 27
Winter Games	27
World Games	27

FIREBIRD

Pawn	$ 28
Star Glider	28

FTL

Sun Dog	$ 25

INFOCOM

Leather Goddesses of Phobos	$ 26

UNICORN

Final Word	$ 99
Hex	24
P.C. Intercom	69

MARK WILLIAMS

Mark Williams-C	$129

MICROPROSE

Silent Service	$ 25
F-15 Strike Eagle	25

PHILON

Basic M Compiler	$ 89
"C" Compiler	110
Cobol Compiler	200
Fortran Compiler	200

SIERRA ON LINE

King's Quest	$ 30
King's Quest II	30
King's Quest III	30

SOFTLAW

VIP Lite	$ 99
VIP Professional	175

SPECTRUM HOLOBYTE

Gato	$ 34

SUBLOGIC

Flight Simulator	$ 36

TIMEWORKS

Data Manager ST	$ 56
Swift Calc ST	56
Wordwriter ST	56

UNISON

Printmaster	$ 27
Art Gallery I	21
Art Gallery II	21

Simple words for powerful packages

Write

TextPro—Wordprocessor with professional features and easy-to-use! Full-screen editing with mouse or keyboard shortcuts. High speed input, scrolling and editing; sideways printing; multi-column output; flexible printer installation; automatic index and table of contents; up to 180 chars/line; 30 definable function keys; metafile output; much more. **$49.95**

Paint

PaintPro—Express yourself with **PaintPro**, the GEM-based, full-page graphics design package. Multiple windows. Cut & paste between windows. Free-form sketching; lines, circles, boxes, text, fill, zoom, undo, rotate, invert, help. Edit fill and line patterns. **$49.95**
PaintPro Library #1–hundreds of clip art pictures, 5 GDOS fonts. Fills 3 disks. **$29.95**

Manage

DataRetrieve—Data management was never this easy! Help screens; lightning-fast operation; tailorable display; user-definable edit masks; up to 64,000 records. Supports multiple files. Includes RAM-disk programs. Complete search, sort and file subsetting. Interfaces to TextPro. Easy printer control. Includes five common database setups. **$49.95**

New Version

Plan

PowerLedger—A powerful, large capacity (65,000 by 65,000 cells) spreadsheet package that also features a built-in calculator, online notepad and integrated graphics. Displays your data in numerical or graphical format instantly in up to seven different chart types (pie, bar, 3D bar, line, etc.). 14 digit precision with 37 math functions and more. **$79.95**

Learn the inside story of your ST



TRICKS & TIPS
Fantastic collection of programs and info for the ST. Complete programs include: super-fast RAM disk; time-saving printer spooler; color print hardcopy; plotter output hardcopy; creating accessories. Money saving tricks and tips. 260pp $19.95

Intro to MIDI Programming
Discover the magic of MIDI! Learn MIDI programming, how to program your synthesizer, how to buy MIDI software, how to buy a synthesizer, use extended BIOS. Includes source code for ST music box auto-player from Xlent Software. 250pp $19.95

ST Disk Drives-Inside and Out
Includes chapters on files, file structures and data management. Thoroughly discusses the floppy disk, the hard disk and the RAM disk both from a programming and a technical perspective. Includes several full-length utilities and programming tools that enable you to further explore to ST disk drives. 450pp $24.95



INTERNALS
Essential guide to the inside information of the ST. Detailed descriptions of sound and graphics chips, internal hardware, I/O ports, using GEM. Commented BIOS listing. An indispensable reference for your ST library. 450pp $19.95

GEM Programmer's Reference
For serious programmers needing detailed information on GEM. Presented in an easy-to-understand format. All examples in C or assembly language. Covers VDI and AES functions. No serious programmer should be without. 410pp $19.95

3D Graphics Programming
FANTASTIC! Learn how to create fantastic and impressive 3D graphics on your Atari ST. Rotate, zoom and shade 3D objects. All programs written in machine language for high speed. Learn the mathematics behind 3D graphics. Hidden line removal, shading. Includes 3D pattern maker and animator. 350pp $24.95

Other software and books also available. Call or write for your **free catalog** or the name of your nearest dealer. Or you can order directly using your Visa, MC or Amex card. Add $4.00 per order for shipping and handling. Foreign orders add $12.00 per item. 30-day money back guarantee on software. Dealers inquires welcome—over 2000 dealers nationwide.

Atari and Atari ST are trademarks of Atari Corp. GEM is a trademark of Digital Research Inc.

Abacus

P.O. Box 7219 Dept. A6 Grand Rapids, MI 49510
Phone 616/241-5510 • Telex 709-101 • Fax 616/241-5021

CIRCLE 001 ON READER SERVICE CARD

Antic
The ATARI® Resource

JUNE 1987, VOLUME 6, NUMBER 2


CITADEL/22

FEATURES

ATARI NEWS UPDATE
XE Game System, New Fair Dates — 19
PAGE 6: THE INFORMER by Matt Loveless and Mike Eggers
Look through BASIC status windows — TYPE-IN SOFTWARE — 24
BASIC BONANZA by Charles Cherry
Powerhouse languages for the 8-bit Atari — 26
GOLF HANDICAP CALCULATOR by Jerry White
Practice your game while your Atari crunches numbers — TYPE-IN SOFTWARE — 30
VERBOT COMMANDER by Albert Bagetta
Atari "talks" to your Robot — TYPE-IN SOFTWARE — 39
WILD INVENTIONS YOU CAN BUILD FOR PENNIES by Thomas Simmons
From the "Rube Goldberg" of the Atari — 42
LOGO MAILING LIST by Allan Moose and Marian Lorenz
Mighty mail-merging — TYPE-IN SOFTWARE — 51



ATARI NEWS UPDATE/19

DEPARTMENTS

EDITORIAL
NEWSROOM WRITE-IN CAMPAIGN by Nat Friedland — 6
USERS GROUP
CHICAGO'S CLAUG by Gregg Pearlman
Pitching in at Atari's CES booth — 20
GAME OF THE MONTH
CITADEL by Heath Lawrence
Catch pneumonium bombs and save the world — TYPE-IN SOFTWARE — 22
BONUS GAME
STING RAYER by Steve Argyle
Easy-to-type space shoot-em-up — TYPE-IN SOFTWARE — 23
STARTING OUT
ATARI ANIMATION by Robin Alan Sherer
Lesson 1: Character Graphics — TYPE-IN SOFTWARE — 35
PRODUCT REVIEW
Warship, Chessmaster 2000, Miniature Golf, Theater Europe — 45

SOFTWARE LIBRARY

TYPE-IN LISTINGS SECTION — 83

ST RESOURCE

A LITTLE GEM by Patrick Bass
Starting out programming in GEM — TYPE-IN SOFTWARE — 58
ST REVIEWS — 64
AEGIS ANIMATOR ST AND ART PAK ST by Matt Loveless
Design your own computerized cartoons — 69
ST NEW PRODUCTS — 74
ALICE—THE PERSONAL PASCAL by David Plotkin
The first interpreted ST Pascal — 75
GFA BASIC by David Plotkin
At last, the BASIC you've been waiting for — 79


CHICAGO'S CLAUG/20

Cover Photos by Eadweard Muybridge from *Animals In Motion*, Courtesy of Dover Publications, Inc., New York, N.Y., Copyright© 1957.

Antic—The Atari Resource is published twelve times per year by Antic Publishing. Editorial offices are located 544 Second Street, San Francisco, CA 94107. ISSN 0745-2527. Second Class Postage paid at San Francisco, California and additional mailing offices. POSTMASTER: Send address change to **Antic**, P.O. Box 1919, Marion, OH 43306.

MASTHEAD — 6
IO BOARD — 11
HELP — 14
PRODUCT REVIEWS — 45
NEW PRODUCTS — 50
THE CATALOG — 74-75
SHOPPERS MARKET — 96
ADVERTISERS LIST — 97
TECH TIPS — 98

Lyco Computer

Marketing & Consultants

SINCE 1981

NOT ALL MAIL ORDER FIRMS ARE CREATED EQUAL

star MICRONICS·INC

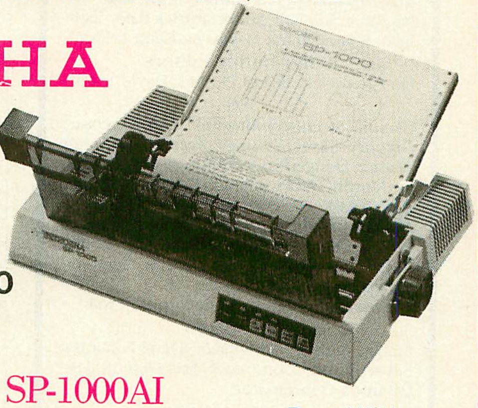


$175.00
with purchase
of printer stand.
(limited offer)

~~RETAIL PRICE $349.95~~

NX-10
Dot Matrix Printer
120 cps Draft · 30 cps NLQ
1-year warranty
EXCELLENT FOR IBM AND EPSON

SEIKOSHA



Limited Offer!
$185.00
~~RETAIL PRICE $299.95~~

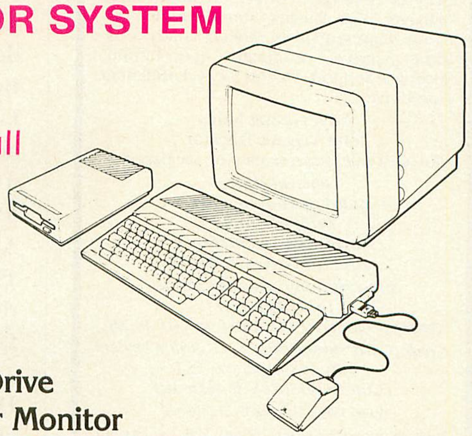
SP-1000AI
Dot Matrix Printer
100 CPS Draft 20CPS NLQ
Buy With Confidence
BEST VALUE AROUND

ATARI HARDWARE

XM-301 Modem	$42.95
SF 314 Drive	$219.95
SF 354 Drive	$129.95
1050 Drive	$139.95
SHD 204 20 MEG	$579.95
130 XE	$139.95
65 XE	$99.95
520 ST Mono	$515.95
INDUS DRIVE	$179.95

ATARI®

520 ST COLOR SYSTEM
NOW ONLY $725.00



Lyco provides full 90 day service warranty at no additional cost.

- ★ 520 Keyboard
- ★ SF-354 Disk Drive
- ★ SC-1224 Color Monitor

ATARI ST SOFTWARE

ACTIVISION

Ballyhoo	$23.95
Borrowed Time	$32.95
Champ. Basketball	$28.95
Champ. Baseball	$29.95
Champ. Golf	$NEW
Game Maker	$NEW
Hacker 2	$32.95
Hacker	$28.95
Leather Goddesses	$23.95
Little People	$32.95
Moon Mist	$23.95

EPYX

Supercycle	$24.75
Winter Games	$24.75
World Games	$24.75
Wrestling	$24.75
Karate Champ	$24.75

UNISON WORLD

Art Gallery 1 or 2	$18.95
Print Master	$24.95

SSI

Phantasie II	$24.75
Road War 2000	$24.75
Colonial Conquest	$24.75

MicroProse

Silent Service	$24.95
F-15 Strike Eagle	$24.75

OSS

Personal Pascal	$48.95
Personal Prolog	$51.75

INFOCOM

Leather Goddesses	$24.75
Moonmist	$24.75
Hollywood Hi-Jynx	$24.75

ACCESS Software Incorporated

Leaderboard	$24.75
Tournament DSK1	$15.75
10th Frame	$24.75

FIREBIRD

Starglider	$26.75
The Pawn	$26.75
Golden Path	$26.75

TO ORDER CALL TOLL FREE
1-800-233-8760
IN PA 717-494-1030
CUSTOMER SERVICE
717-494-1670

or send to
Lyco Computer
P.O. Box 5088
Jersey Shore, PA 17740

MASTERCARD
VISA

Risk Free Policy

In-stock items shipped within 24 hrs. of order. NO deposit on C.O.D. orders. Free shipping on prepaid cash orders within the Continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO and international orders add $5.00 plus 3% for priority mail. Advertised prices show 4% discount for cash, add 4% for MasterCard and VISA. Personal checks require 4 weeks clearance before shipping. We cannot guarantee compatibility. We only ship factory fresh merchandise. Ask about USP Blue and Red Label shipping. All merchandise carried under manufacturers' warranty. Return restriction applicable. Return authorization required. We check for stolen credit cards. We accept purchase orders from educational institutions. All items subject to change without notice.

1-800-233-8760

CIRCLE 024 ON READER SERVICE CARD

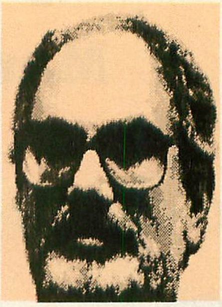
Antic
The ATARI Resource
Publisher
James Capparell

General Offices
& Catalog Customer Service
(415) 957-0886
***Antic**, 544 Second Street*
San Francisco, CA 94107
Subscription Customer Service
(614) 383-3141
***Antic**, P.O. Box 1919, Marion, OH 43306*
Credit Card Subscriptions & Catalog Orders
(800) 443-0100 ext. 133
(Continental U.S. & Hawaii)
June 1987, Volume 6, Number 2

Subscriptions: One year (12 issues) $28. Canada and Mexico add $8, other foreign add $12. Action Edition (12 issues with disks) $99.95, all foreign add $25. (California residents add 6½% sales tax for disk subscriptions.

Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

Editorial



Springboard's **Newsroom** is the kind of useful, easy-operating software that thousands of 8-bit Atari owners would want to buy as soon as it became available. Yet Springboard has no plans to convert this program for the Atari market and gain additional sales.

Newsroom was a successful product on the Apple II, Commodore 64 and IBM PC during 1986. At $49.95, Newsroom is a page layout program that makes it easy to create flashy newsletters on standard dot-matrix printers. Newsroom includes over 600 clip art pictures, five text fonts, an easy-to-use word processor, drawing capabilities and automatic wrapping of text around pictures. There are also two affiliated **Clip Art Collection** disks ($29.95, $39.95) containing an additional 1,400 pictures.

The blindness of Springboard's no-Atari policy is made evident by the dramatically contrasting example of Broderbund's **Print Shop** ($49.95). Like Newsroom, Print Shop is a popular and versatile graphics printing utility. Print Shop was originally released for the Apple II in May, 1984 and the Atari version appeared in February, 1985—two months after the Commodore conversion. IBM and Macintosh versions are now also available.

According to Broderbund Sales Director Rod Haden, "Print Shop sales are still healthy. And our experience with this software showed that converting a hit program to the Atari provides reasonable success."

Similarly, the Atari-version success of **Computereyes** — a $129.95 hardware-software video digitizer that won an Outstanding Product Award in the May, 1986 **Antic**—prompted Dave Pratt, the president of Digital Vision Inc., to say, "We would have brought out the Atari conversion much sooner if we realized how fast sales would take off, compared to the earlier Commodore and Apple II editions. Atari users seem to be heavily into graphics."

WRITE SPRINGBOARD NOW

If *you'd* like to be able to buy an 8-bit Atari version of Newsroom, you ought to let Springboard Software know. The most effective way to do this is to write a letter, print it on your dot-matrix, and mail it to:

John Paulson
President
Springboard Software, Inc.
7808 Creekridge Circle
Minneapolis, MN 55435

It's also a good idea to mail **Antic** a copy of your Springboard letter, as well as copies of any replies you get from the company. This will help us keep everybody informed about how effectively the Newsroom campaign is proceeding.

Longtime readers of **Antic** will recall how successfully we all worked together during the 1985 "We're Mad As Hell. . ." write-in campaign. This drive to get more Atari software released by major independent publishers began with a May 1985 editorial. As a direct result of thousands of **Antic** reader letters, some much-wanted software conversions were brought out by companies including Electronic Arts and Broderbund.

Now seems to be a good time for putting on some pressure again. Newsroom would fill an obvious gap in the Atari 8-bit market. But please feel free to write the **Antic** I/O Board about any other important software you think we should be all be demanding for our computers.



Nat Friedland
Editor, Antic

ATARI

STWARS™

VICTORY IS YOURS!



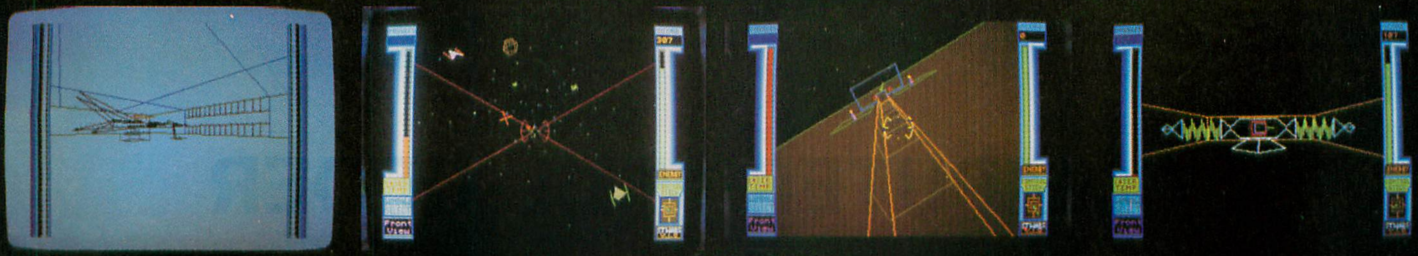
THE CHALLENGE: You have just seated yourself in an ultra-sleek intergalactic space fighter. Red Alert! Your craft is catapulted out through the launch bay doors into an ultra-hostile environment. **YOUR MISSION:** Survive the onslaught of robot drones, ground attack craft, and enemy fighters through ten fantastic sequences of escalating danger. Withstanding this, you must enter the Starbase Trench, fly through its tunnels, avoid all barriers, and destroy the Starbase Power Generator—provided your ship has enough energy remaining! **THE RESULT:** A masterpiece of 3-dimensional graphics, awesome sound effects, intense drama, and treachery at every turn.

MILES Computing

Miles ahead of the pack.

Miles Computing, Inc.
7741 Alabama Avenue
Suite 2
Canoga Park, California 91304
(818) 341-1411

Another great game from the makers of the smash hit **HARRIER STRIKE MISSION.™**



When you want to talk Atari

XL/XE HARDWARE

INTERFACES

ICD
P:R Connection....................$59.99
Printer Connection....................44.99
Supra
Microprint....................39.99
1150....................39.99
1151 (1200 XL)....................39.99
Xetec
Graphix Interface....................39.99
Atari
850 Interface....................109.00

COMPUTERS



Atari 130XE **$129.00**

65XE....................94.99
800 XL....................68.99
800 XL Package (1050 Drive, 1025 Printer, Joystick & Diskettes)....................329.00

MEMORY

Axlon
32K Board....................19.99
48K Board....................Call
128K RAM Disk....................Call

MODEMS

Atari
SX212 300/1200 (ST)....................99.99
835....................24.99
XMM301....................44.99
Anchor
VM520 300/1200 Direct Connect (ST)129.00
Volksmodem....................49.99
Volksmodem 1200....................129.00
Supra
1200 AT or ST....................139.00

ST HARDWARE



1040 Monochrome System **$699**

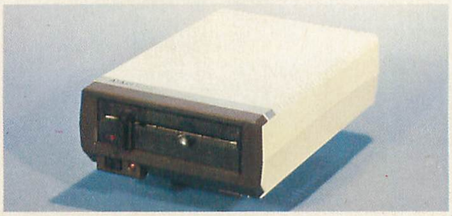
Includes: 1040ST, 1 mb RAM with 3½" drive built-in, 192K ROM with TOS, Basic, power supply and monochrome monitor.

1040 RGB/Color System....................879.00
520 Monochrome System (Includes: 520ST computer with modulator, disk drive, mouse, logo, Basic and monochrome monitor)499.00
520 RGB/Color System....................769.00
SM124 Monochrome Monitor....................129.00
SM1224 Color Monitor....................329.00
1040 Computer (no monitor)....................589.00

Call on the new Atari: 520ST FM/PC compatible/Laser Printer/Daisywheel.

DRIVES

Atari
AA354 SS/DD Disk (ST)....................$129.00
SHD204 20 Meg Hard Drive (ST)...599.00
AA314 DS/DD Disk (ST)....................219.00

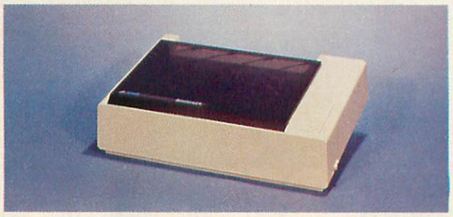


Atari 1050 SS/DD Disk (XL/XE) **$139.00**

Indus
GT Disk Drive (XL/XE)....................189.00
Supra
20 Meg Hard Drive (XL/XE)....................679.00
20 Meg Hard Drive (ST)....................599.00
30 Meg Hard Drive (ST)....................779.00

PRINTERS

Atari
1020 XL/XE....................$29.99
1025 XL/XE....................119.00
XDM121 XL/XE....................209.00
XMM801 XL/XE....................199.00



Atari XMM804 ST **$199**

Citizen
MSP-10 (80 col.)....................289.00
MSP-20 (80 col.)....................339.00
Premier 35 cps Daisywheel....................489.00
C.Itoh
Prowriter 1550P (132 col.)....................269.00
Prowriter 8510SP....................Call
Epson
LX86, (120 cps)....................199.00
FX86E, FX286E (240 cps)....................Call
EX800, EX1000....................Call
LQ800, LQ1000....................Call
Juki
5510 Color Dot....................349.00
6100 10 cps Daisywheel....................369.00
6300 40 cps Daisywheel....................649.00
NEC
ELF360 20 cps....................389.00
3000 Series Spinwriter 35 cps....................779.00
Pinwriter 560-660-760....................Call
Okidata
Okimate 20....................129.00
ML-182, ML-192, ML-193....................Call
ML-292, ML-293....................Call
Panasonic
KX-1080I 120 cps 80 col....................209.00
KX-1091i 180 cps 132 col....................299.00
Star Micronics
NX-10 120 cps 80 col....................209.00
NX-15 120 cps 132 col....................379.00
Toshiba
P321 216 cps 24 pin....................479.00
P341 216 cps 24 pin....................589.00

COMPUTER MAIL ORDER

......you want to talk to us.

XL/XE SOFTWARE

Access	
Leaderboard Golf	$25.99
Executive Disk	14.99
Accolade	
Fight Night	19.99
Hardball	19.99
Atari	
Various Titles from	$3.49
Batteries Included	
Paperclip w/Spellpack	37.99
B-Graph	37.99
Broderbund	
Printshop	27.99
Graphics Library 1-2-3 (ea.)	16.99
Cygnus	
Starfleet I	34.99
Datasoft	
221 Baker St.	21.99
Electronic Arts	
Touchdown Football	12.99
Chessmaster 2000	29.99
Epyx	
World Karate Championship	21.99
Infocom	
Zork III	24.99
Microprose	
Top Gunner	19.99
F-15 Strike Eagle	24.99
Origin Systems	
Ultima 4	37.99
Roklyn	
Gorf/Wizard of Wor/AT Deluxe	
Anti-Sub/Journey to Planet (ea.)	3.99
Strategic Simulations	
Colonial Conquest	25.99
Sublogic	
Flight Simulator II	34.99
X-Lent	
Typesetter	24.99



AtariWriter Plus **$34.99**

ACCESSORIES

Maxell	
MD1-M SS/DD 5¼"	$8.49
MD2-DM DS/DD 5¼"	9.49
MF1-DDM SS/DD 3½"	12.49
MF2-DDM DS/DD 3½"	18.49
Sony	
MD1D SS/DD 5¼"	7.99
MD2D DS/DD 5¼"	9.49
MFD-1DD SS/DD 3½"	12.99
MFD-2DD DS/DD 3½"	19.99
Allsop Disk Holders	
Disk File 60-5¼"	9.99
Disk File 30-3½"	9.99
Curtis	
Emerald	39.99
Safety Strip	19.99
Universal Printer Stand	14.99
Tool Kit	22.99
ICD (XL/XE)	
Sparta DOS Contruction Set	28.99
US Doubler/Sparta DOS	49.99
Real Time Clock	49.99
Rambo XL	29.99
Multi I/O Board 256K	179.00
Multi I/O Board 1 Meg	299.00

ST SOFTWARE

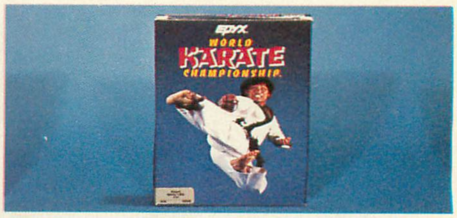


Access Leaderboard Golf **$26.99**

Activision	
Music Studio	37.99
Antic	
Cad 3-D	32.99
Atari	
Star Raiders	19.99
Batteries Included	
Degas Elite	48.99
Thunder	29.99
Cygnus	
Starfleet I	35.99

ST SOFTWARE

Ditek	
STA Accounts	169.00
Electronic Arts	
Chessmaster 2000	34.99



Epyx World Karate Championship **$25.99**

Championship Wrestling	27.99
Haba	
Habawriter	34.99
Hippopotamus	
Hippo Backgammon	27.99
Infocom	
Zork Trilogy	44.99
Hitchhiker's Guide	29.99
Michtron	
Major Motion	25.99
Microprose	
Silent Service	26.99
F-15 Strike Eagle	29.99
Mindscape	
High Roller	34.99
OSS	
Personal Pascal	47.99
Paradox	
Wanderer (3-D)	27.99
Polarware	
Crimson Crown	26.99
Psygnosis	
Arena	26.99
Sierra On Line	
Winnie The Pooh (Educ.)	18.99
Sublogic	
Flight Simulator II	37.99
Timeworks	
Swiftcalc	49.99
VIP	
Professional (GEM)	144.99
X-Lent	
Typsetter	27.99

In the U.S.A. and in Canada

Call toll-free: 1-800-233-8950.

Outside the U.S.A. call 717-327-9575 Telex 5106017898

Educational, Governmental and Corporate Organizations call toll-free 1-800-221-4283

CMO. 477 East Third Street, Dept. B606, Williamsport, PA 17701

ALL MAJOR CREDIT CARDS ACCEPTED.

POLICY: Add 3% (minimum 17.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery use your credit card or send cashier's check or bank money order. Pennsylvania residents add 6% sales tax. All prices are U.S.A. prices and are subject to change and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee.

CIRCLE 011 ON READER SERVICE CARD

"Ordinary online services left me flat..."

"With GEnie™ I discovered vast new horizons."



$10.00+ per hour



$5 per hour

There's only so far you can go with most ordinary online information networks. But with GEnie—the General Electric Network for Information Exchange—there's virtually no end to the exciting new interests you can explore. Discover the value of GEnie's vast range of services and explore new territory with guides from our Special Interest Groups.

Join the friendly crew with GEnie's Atari† ***RoundTable™ Special Interest Group*** for exciting and informative discussions. Benefit from the expertise of experienced individuals. Compare notes on hardware, software, games or any other topic you choose. And, for the simple cost of down-loading, collect thousands of valuable public domain software programs for your personal computer. Over 1000 new programs are added to our libraries every month. And remember, UPLOADS ARE FREE on GEnie!

No extra charge for 1200 Baud.

Make new friends, schedule meetings, gather facts and figures, set up travel plans, get the news, be entertained and even shop online for a fraction of what other information services charge, because GEnie's non-prime rate for 300 or 1200 baud is only $5 an hour. GEnie always comes out ahead of the competition in savings, in some cases by as much as 60%.

You get even more for your money.

In addition to user support groups, you can meet new people with ***GEnie's Live Wire™ CB Simulator.*** Exchange messages with ***electronic mail*** service. Find the best vacation deals and make your reservations with ***American Airlines travel service.*** Shop at home with ***American Express Merchandise Shop.*** Learn the fun way with a subscription to ***Grolier's electronic encyclopedia.*** Play classic and ***multiplayer games.*** Use GEnie's ***Financial Services*** to track stock market quotes, check market indicators and maintain an automatically updated personal portfolio online. All this ***plus*** new services added each and every month!

Map out your own voyage of discovery with GEnie as your guide...enrich your tomorrows by signing on with GEnie today.

Backed in the GE Tradition

GEnie is brought to you by General Electric, whose reputation is built on attention to detail and customer satisfaction. We're continuing that tradition with GEnie.

Compare & Save*	Services						Pricing			
	Travel & Shopping	SIGs/User Groups	CB & Mail	Financial Services	News	Games	Registration Fee	Monthly Minimum	Non-prime time rates 300 baud	Non-prime time rates 1200 baud
The Source	X	X	X	X	X	X	$49.95	$10.00	$8.40	$10.80
CompuServe	X	X	X	X	X	X	$39.95	none	$6.00	$12.50
GEnie†	**X**	**X**	**X**	**X**	**X**	**X**	**$18.00**	**none**	**$5.00**	**$5.00**

**Basic rates and services shown in effect 2/87. †Non-prime time applies Mon.–Fri., 6pm–8am local time, all day Sat., Sun., and nat'l holidays. Subject to service availability. Additional charges apply for 2400 baud and financial services.*

Sign up from your keyboard today.
4 Easy Steps:

1. Have your major credit card or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial **1-800-638-8369.** When connected, enter HHH
4. At the U# = prompt enter **XJM11884,GEnie** then RETURN.

Need help or more information? No modem yet? We can help. In U.S. or Canada call **1-800-638-9636.**

† Atari is a registered trademark of Atari Corporation

ATARI CORP.
NOW ONLINE!

GEnie™

Stay online longer, for less.

INFORMATION SERVICES

General Electric Information Services Company, USA

GEnie rates and services subject to change. Uploads are free during non-prime hours at 300 or 1200 baud. Some services offered on Genie may include additional charges.

I/O Board

JACS BACKUP

Thanks for mentioning the Jersey Atari Computer Society's efforts regarding our Print Shop Graphics disks in your article *Atari Still Makes the Grade* (**Antic**, October 1986). Incidentally, Volume 4 is now available.

JACS wasn't prepared for the tremendous response generated by that mention. Some readers may have waited 10 weeks to receive disks ordered from us—I apologize. We've enlisted more people to help send the disks out, but keep in mind that we're a users group, not a business. *No* JACS members are paid for their efforts, and we must all work full-time jobs to support our computer hobby.

Any of you who have waited more than 10 weeks for your disks, please notify us at: JACS Graphics Disks, P.O. Box 710, Clementon, NJ 08021

Forrest Blood
President, JACS

ATARI SCAPEGOAT

It's amazing that most major software houses (except, notably, Broderbund and Infocom) have concluded that there's no profit in the Atari 8-bit. Even if the Atari titles were released *after* the same programs on other computers, then whatever the companies made on the Atari versions would be more than they're making now—nothing. There's certainly no reduction in titles for Apple, Commodore and IBM systems. And I've seen plenty of piracy in those users communities. Are we really to believe that the publishers will cease making Apple software? Hardly. Commodore software? Not likely. IBM software? This would be financial suicide.

Here's why we Atarians are taking it on the chin for *all* home and personal computer users. Software houses are fed up with piracy and want to send this message to the public: If you pirate our software, we'll just stop making titles for your machine.

So which machine is singled out as an example? The Atari 8-bit, of course. Why? Because software companies will be least affected by cutting out Atari software.

Claude Mitchell
Cleveland, OH

continued on page 13

GREAT SOFTWARE
from across the pond

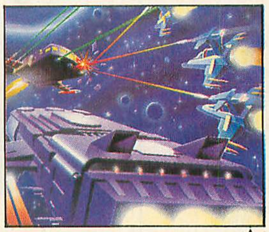
Leisure Software ATARI ST™ **Professional Software and Utilities.**



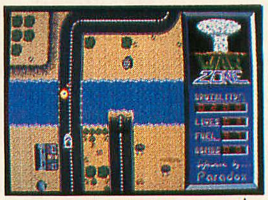
ST Karate★ $29.95
The ultimate martial arts game for the Atari ST. 1 or 2 player options with multiple opponents, digitized sound and unbelievable graphics. Joystick control gives 18 possible super-fast movements. A must for the serious games player.



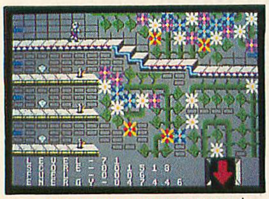
New METROPOLIS★ $24.95
A fast action shoot-em-up with high speed lazer canons, smart bombs and 360 movement. Steer your craft around the amazing and colourful city ridding it of the usual barrage of hi-tech aliens. The one way streets, crossfire and road blocks will ensure you don't get through....well maybe!.



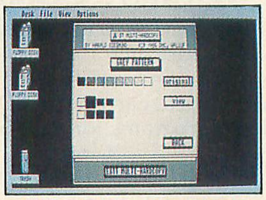
WANDERER★
3D Stereo $39.95
Unbelievable! The first ST arcade in full stereo 3D! Live out a fantastic interplanetary adventure experiencing amazing 3D sensations with the special glasses supplied with the game. Wanderer takes you on a high speed mission through space, with the action punctuated only by rounds of amazing intergalatic poker!. A definite must!.



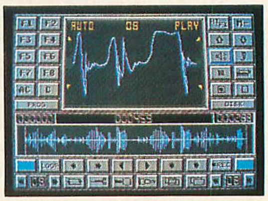
FIRE BLASTER★
WAR ZONE★
midi music 2 Disks
$34.95
Amazing value! Two disk pack with two full colour ST arcade games! Fireblaster is the ultimate shoot-em-up with whole screen movement, multiple ships and over 35 levels. War Zone is a futuristic tank simulation with multiple features. An amazing pack for shoot-em-up fans.



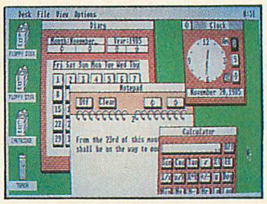
ST PROTECTOR★
SPACE STATION★
midi music 2 Disks
$34.95
Another super value two disk, two game pack! Space Station is a colourful and fantastic ST platform game with layer upon layer of hidden depths. Your task of cleaning up the station is helped by your ability to shoot, jet pack and teleport to new and undiscovered areas. Protector is a full colour "defender" style game with multiple screens and fast action.



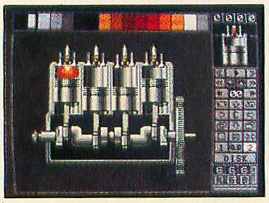
FLASH CACHE
FLASH BAK
$79.95 GEM
This is one of the best hard disk utility packages available. Flash cache offers selective ram disk caching to increase your hard disk performance by up to 50%. Also included is a complete solution to the GEM 40 folder bug and the facility to password protect a disk partition. Flash-Bak is a fully featured hard disk backup utility with compression, encryption, wildcards and many auto disk features. Flash-Bak offers real performance with an amazing 1MB+ per minute backup to floppy disk! Full fact sheet available.



PRO SOUND DESIGNER $99
Includes 8 bit sound digitizer mono version GEM
Quite simply the ultimate in sound control on your ST! A colourful VCR style interface ensures that anyone can use this program and be creating fantastic sounds within minutes. Full control over the AY-3-8910 sound chip is provided (with support for your own programs) as well as a superb 8 bit digitizer that allows you to playback samples from within your own programs. The sound sample editor is a dream! Demo disk available for $5.



BACK Pack
$79.95 GEM ROM
Back-Pack is an ST ROM containing nine powerful desk accessories without using up RAM. Back-Pack contains a Printer Buffer, Address Book, Mini Clock, RAM disk, Diary, Notepad, Typewriter, Alarm Clock and a powerful scientific calculator. A full fact sheet is available for this amazing program.



★ PRO SPRITE DESIGNER $59.95
This fully featured sprite and animation designer is the easiest and fastest way to create animations on the ST. Control routines are included for Basic, C and Assembly language. This is quite simply one of the best animation designers available. If you don't believe us send $5 and we will send you an unbelievable demo!



THE EIDERSOFT EXTRAVAGANZA
$19.95
This two disk set contains two ST arcade games* including a super 3D pac man called Spook, demos, desktops and utility programs. It comes in a super shrink wrap pack with posters, fact sheets, stickers and a host of other goodies. Excellent value!!

MINI COMM
$39.95 GEM
Mini Comm is a complete communications package as a GEM desktop accessory! Mini Comm is fully featured and supports most protocols. Mini Comm has a telephone book, macro language, powerful redialer, call cost calculator and a host of other features. The real power of Mini Comm is its ability to work in the background, which includes the facility to do **background downloading!** Full fact sheet available.

Tempus
$49.95
The Professional Editor GEM
Tempus is the ultimate text editor for programmers. Up to four windows of text can be manipulated at high speed. Support is given for structured programming layout and the package comes complete with a fully fledged programmers calculator, among a host of other features. Tempus is one of the fastest text editors available (c1000 search and replace per second) and is extremely comfortable to use. We can provide a non refundable try-before-you-buy version for $7.50.

To order or request product information please telephone
1-412-947-3739
VISA MasterCard
or write to the address below.
Eidersoft USA Inc
PO Box 288
Burgettstown PA 15021
PA residents add 6% sales tax.

EIDERSOFT
T·R·I·A·N·G·L·E
SOFT INNOVATION
Paradox

Shipping Info: Continental US free: Add $3 for COD
Paying Info: Credit Card (no surcharge), cashier check or money order.

★ colour only. GEM is the trademark of Digital Research Inc. ST and Atari are the trademarks of the Atari Corporation.

DEALERS/DISTRIBUTORS WE NEED YOU
Please telephone for dealer pack and full information.

Note we only sell high quality ST software that is supplied on single sided diskettes and is compatible with all 520/1040 ST computers. Mega ST compatibility please telephone.

CIRCLE 077 ON READER SERVICE CARD

WHITHER BASIC?

I held down [OPTION] when booting Bank Street Writer, and the screen said "NEED BASIC CARTRIDGE". When I booted it *with* BASIC installed, the screen said "NEED 48K." Is this possible?

Kenny Hom
San Jose, CA

When we called the publisher, they said you might have an old version of the program, but they do give free updates. Just send your disk to: Broderbund Software, Replacement Department, 17 Paul Drive, San Rafael, CA 94903.—ANTIC ED

RADIO NEWS

I have an Atari 800 and need help in finding ham radio programs. Where can I look?

Wayne Bantz
Napa, CA

CompuServe has an Amateur Radio SIG (Type GO HAMNET) with some programs that may be useful to you. Many readers will also be interested in learning that new privileges have recently been granted to Novice class Amateur Radio operators (hams). In the past, Novices were restricted to Morse code in certain bands below 30MHz. Now they can use single sideband voice and digital communications at 28 MHz and certain VHF and UHF frequencies.

Digital communications allows Novices to use their Atari computers for radio transmission of data, independent of public telephone systems. The Novice license examination requires much less technical knowledge than the higher grades which were previously required for digital communications privileges. See the special section about Atari radio communications in **Antic**, *November 1985.*

To find out how to obtain a Novice license, contact the Amateur Radio Relay League, Dept. NE, 225 Main Street, Newington, CT 06111. Also of interest to would-be hams will be a new free booklet, Introduction to Packet Radio—A Newcomer's Guide. *Packet radio is an increasingly popular state-of-the-art digital communications technology. The booklet is available from Kantronics, 1202 E. 23 Street, Lawrence, KS 66046.*—ANTIC ED

PANASONIC ROMS

For all Panasonic 1080i printer owners: after struggling with Print Shop and my new 1080i, I was sure the problem was in the printer. I gave Panasonic the details, and they soon sent a new ROM chip for my 1080i. The ROM replacement was easy, even for a novice.

Mike Durmeyer

continued on next page

NO DISNEY

In ST New Products (***Antic***, January 1987) under *Arrakis Advantage Series* Peter Adamakos, president of Disada Productions in Montreal, was called "late of Disney Studios." The original press release provided to us was in error. Adamakos says that Disada "has gotten involved with a Disney software series" but he never claimed to have worked at Disney.
—ANTIC ED

SANTIAGO'S FIRST BBS

I am looking for information from BBS sysops from the United States about installing and operating the first BBS in Santiago. I would appreciate it if someone could send me a description of the ideal hardware configuration and necessary software.

Juan Carlos Rios
Roman Diaz 1114
Providencia
Santiago de Chile

MONTHLY MENU

After I make a selection from the main menu of the monthly Antic Disk, is there any way to get back to the main menu without turning the computer off and on again?

Glenn Collura
Maple Heights, Ohio

Type RUN "D:MENU — ANTIC ED

DRAWING ROUTINES

I am programming in assembly language and would like to access the drawing routines of my 800XL. I have been unable to find any references on this subject.

Bechbache Salah
169 Boulevard Serurier
75019 Paris, France

The Optimized Systems Software MAC/65 Toolkit (which requires the MAC/65 macro assembler) has a library of graphics macros that are about as simple to use as BASIC commands. Player/Missile graphics are also supported with a library of macros.—ANTIC ED

MIDI PINS

The MIDI cable problem mentioned by Marcel Van Someren in the I/O Board (**Antic**, February 1987) does indeed affect operation with the Casio CZ-101 synthesizer. I was unable to send sound patches between my 520ST and the CZ-101 internals using software designed for that. Finally I found that pins 3 and 5 of the MIDI cables were soldered together, as were pins 1 and 4. After I separated the pins, everything worked fine.

Robert Bernick
Torrance, CA

ATARIWRITER PLUS SG-10

I have a Star Micronics SG-10 printer hooked up to my Atari 130XE through a P:R: Connection interface. Most of my custom printer driver functions work fine, but I don't know how to turn off superscript and subscript. Can you help?

Gerald Gambino, Jr.
Emmaus, PA

Page 37 of your AtariWriter Plus manual explains how to enter special printer control codes. To turn off either superscript or subscript, type in a [CONTROL] [O] [27] followed by [CONTROL] [O] [84]. This works on our SG-15, which is the wide-carriage version of the SG-10.

KYAN RUNTIME

While I generally agree with the positive **Antic** review of Kyan Pascal (March 1987), It is simply not true that Kyan has placed a licensing fee on use of the runtime library. Kyan Software has *never* charged a licensing fee or demanded royalties on programs developed with Kyan Pascal, and this is clearly stated on page IV of the manual.

Also, the Toolkits for System Utilities and Advanced Graphics are $39.95 each—not "enclosed" with the main package. Finally, the complete address of Kyan Software is 1850 Union Street, Suite 183, San Francisco, CA 94123. (415) 626-2080.

Erik Warren
Kyan Software

PAGE 6

One line got left out of Listing 3 of the *Page 6 Grab-Bag, Part 1* (March 1987).

```
31130 DATA 7,32,92,228,169,0,
141,112,6,96,169,208,133,213,169,31
```

The TYPO II code for this line is BG.

WORD SEARCHER

If *Word Searcher* (March 1987) halts after finding the first word in your puzzle, change line 1410 to read:

```
1410 FND=FND+1:FOUND=1
```

The TYPO II code for this line is GO.

SUPERTREK

I typed in the program *SuperTrek* (January 1987) and played the game a couple of times when I discovered a problem. Two variables crucial to the running of the program were left out of the listing. To correct these mistakes, add A#=GB to line 1070 and GINTIN=PEEK(A#+8) to line 6640 in SET.MOUSE.SHAPE. Hardly any fancy features will work without these variables.

Jeremy Scicchitano
Buena Park, CA

Both of those statements are already in line 6500, called first from line 1130. The program works as published, including all the fancy features.—ANTIC ED

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **191** ON THE READER SERVICE CARD.

Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

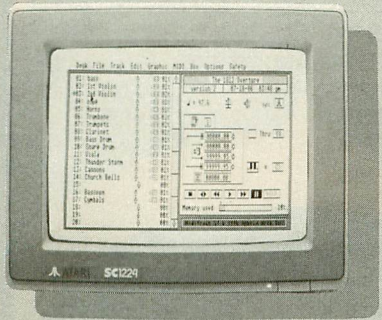
Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.

Tapeless Technology™

Inspired MIDI Software from

Hybrid Arts, Inc.™

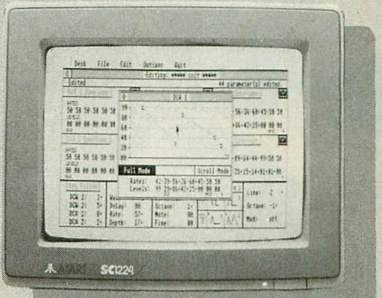
Nobody knows MIDI on the ATARI like Hybrid Arts. We have been the undisputed experts since MIDI started, and now we've got all the bases covered.



MidiTrack ST

MIDI Recorders: With several different professional quality systems to choose from, Hybrid Arts has a MIDI Recorder for every musician and any budget from hobbist to broadcast professional. Starting with **EZ-Track**, the 20 track polyphonic recorder with editing features like quantizing and instant transpose. **MidiTrack ST** has a full range of advanced editing features including an auto patch injection system and FSK, Roland and TTL sync to tape for studio use. And **MidiTrack Professional** comes complete with our **SMPTEMate** box. SMPTE specs include SMPTE read/write, drop frame, non drop frame, 24, 25, or 30 fps, jam sync, both reading and writing of user bit data. Resolution is at the bit level.

Patch Librarians: A complete line of products are available for sound patch libraries. **Genpatch** is designed to work with all MIDI keyboards regardless of manufacturer. **DX-Android**, the highly acclaimed editor/librarian program for the Yamaha DX-7 and TX series. This was the first product of its kind to offer both graphic and numeric editing along with the famous android functions that create new musically useful sounds instantaneously. **CZ-Android** is the CASIO verison that works with all of the CZ keyboard series including the new CZ-1 and CZ-230S.



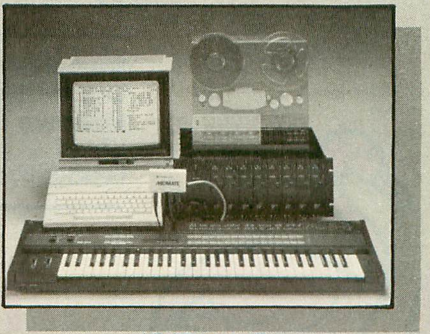
CZ-Android



ADAP SoundRack

Sampling and SMPTE hardware: The revolutionary **ADAP SoundRack** (Analog to Digital Audio Processor) takes full advantage of the speed and memory of the ATARI 1040ST. The "ADAP" is a hardware/software peripheral for the ST that allows music and broadcast professionals to sample 20 seconds at 44.1 khz with 16 bit resolution. Full MIDI compatability is implemented. System is upgradeable to direct to hard disk stereo digital mastering and SMPTE interlock.

The MidiMate software series for the ATARI 8 bit computers: For the musician on a limited budget but still needing professional quality, Hybrid Arts has a complete line of studio-tested software. **MidiTrack III** is a 16 track MIDI recorder, synchronizer and remote controller for the ATARI130XE. Standard features include 10,500 note capacity, looping, copy and paste editing, programmable tempo, track combining and uncombining. **MMS** is a sophisticated monophonic single step entry sequencer. The operator can enter musical notes from either the computer keyboard or the MIDI synth keyboard. 99 tracks are available to work with. **GenPatch** is a generic patch librarian system for all MIDI keyboards. **DX-Editor** is a numeric editor and librarian for the YAMAHA DX-7 and TX. **Oasis** is our low cost Visual Editing System for the Ensoniq Mirage keyboard sampler. Features include full MASOS implementation, 8 levels of magnification, redrawing of wave forms with high resolution graphics. **MidiCom** is a MIDI telecommunications program designed for easy use.



MidiTrack III

Call or write for a free catalog and newsletter which includes a complete listing of products and pricing.

Hybrid Arts, Inc.™

11920 W. Olympic Blvd., LA, Ca. 90064
Computer BBS: (213) 826-4288 Main Office: (213) 826-3777
Telex: 4931231 (HYBRDUI)

ATARI, ST, 520ST, 1040ST, and 130XE are trademarks of ATARI Corp.
Hybrid Arts, EZ-Track, MidiTrack, GenPatch, ADAP SoundRack, Oasis and MidiCom are trademarks of Hybrid Arts Inc.
DX-Android and CZ-Android are products of Hybrid Arts Inc and are not affiliated in any way with LUCASFILM LTD.
DX-7 and TX tone rack are trademarks of YAMAHA International Inc.
Mirage and Ensoniq are trademarks of Ensoniq Inc.
CZ-1 and CZ-230S are trademarks of CASIO Computer Co.

S&S

S & S Wholesalers, Inc.

226 Lincoln Road Miami Beach, FL 33139

1-800-233-6345
ORDERS ONLY

WHOLESALE TO THE PUBLIC
BUY BELOW DEALER COST!

ATARI HARDWARE

130XE Computer	$134.90
65XE Computer	$ 87.90
800 XL Computer	$ 79.90
1200 XL Computer	$ 69.90
1050 Disk Drive	$134.90
1027 Printer	$ 99.90
XMM801 Printer	$199.90
XM801 Modem	$ 37.90
XC11 Data Cassette	$ 37.90
Atari Light pen	$ 37.77
Atari Touch Tablet	$ 42.77
800 XL Power Supply	$ 29.77

EPSON PRINTERS

LX 80 w/Tractor	$259.90
FX 85	$379.90
FX 268	$504.90

PANASONIC PRINTERS

KXP 1080	$199.00
KXP 1091	$249.00
KXP 3131 Daisy Wheel	$279.00
Panasonic Ribbons	$ 8.77
Parallel Printer Cable	$ 18.70

ST SOFTWARE

Hitchhikers Guide to Galaxy	$ 23.97
Infidel	$ 26.97
Leather Goddesses of Phobos	$ 23.97
Moon Mist	$ 23.97
Planetfall	$ 23.97
Sea Stalker	$ 23.97
Sorcerer	$ 26.97
Spellbreaker	$ 29.97
Starcross	$ 29.97
Suspect	$ 26.97
Suspended	$ 29.97
Trinity	$ 23.97
Wishbringer	$ 23.97
Witness	$ 23.97
Zork I	$ 23.97
Zork II	$ 26.97
Zork III	$ 26.97
Final Word	$ 87.00
Hex	$ 23.97
PC/Intercomm	$ 74.40
F-15 Strike Eagle	$ 23.97
Gunship	$ 23.97
Silent Service	$ 23.97
Soft Spool	$ 23.97
Time Bandits	$ 23.97
Your Financial Future	$ 23.97
A Mind Forever Voyaging	$ 26.97
Ballyhoo	$ 23.97
Cutthroats	$ 23.97
Deadline	$ 29.97
Enchanter	$ 23.97
ST Accounts	$144.77
Checkminder	$ 44.97
Chessmaster 2000	$ 27.97
Lands of Havoc	$ 11.97

ST SYSTEMS

COLOR SYSTEM

520 ST Computer	
SF 354 Disk Drive	
SCI 224 Color Monitor	
Basic/Logo/First Word	$779.00

MONOCHROME

520 ST Computer	
SF 354 Disk Drive	
SCI 24 Monitor	
Basic/Logo/First Word	$569.00

1040 COLOR & MONO SYSTEMS

IN STOCK
CALL FOR PRICING...

KOALD CLOSEOUT

Koald Muppet Pad	$ 19.77

MICROPROSE

Aerojet	$ 20.77
F15 Strike Eagle	$ 19.47
Conflict in Vietman	$ 22.77
Gunship	$ 22.77
Silent Service	$ 24.77

BATTERIES INCLUDED

Consultant	$ 35.77
Paperclip	$ 35.97
Paperclip w/Spell	$ 47.77

ST SOFTWARE

ALT	$ 17.97
Animator	$ 23.97
Back-up	$ 23.97
Business Tools	$ 29.97
Calendar	$ 17.97
Cards	$ 23.97
Cornerman	$ 29.97
D.F.T.	$ 29.97
DOS Shell	$ 23.97
Easy Record	$ 47.97
Echo	$ 23.97
Eight Ball	$ 23.97
Flip Side	$ 23.97
Gold Runner	$ 23.97
Intro to ST Logo	$ 29.97
Kissed	$ 23.97
Financial Cookbook	$ 30.97
Golden Oldies	$ 21.97
New Technology Coloring Book	$ 12.97
Ogre	$ 24.97
Skyfox	$ 27.97
Ultima III	$ 36.67
Super Huey	$ 23.77
Alternate Realty "The City"	$ 29.77
Mercenary	$ 23.77

ATARI 128K Word Processing System

130XE Computer	
1050 Disk Drive	
1027 Printer	
Atariwriter Plus	
2 Games	$377.77
w/ XMM 801 Printer	$447.77

ST HARDWARE

520 ST Computer	$399.90
SF 314 Disk Drive	$207.77
SF 354 Disk Drive	$149.77
SCI 224 Monitor	$297.77
SCI 24 Monitor	$167.77
SM 804 Printer	$199.77

ST HARD DRIVES

Atari 20MB	$ 649.90
Supra 10MB	$ 629.90
Supra 20MB	$ 639.90
SUPRA 30MB	$ 829.90
SUPRA 60MB	$1789.90

8 BIT BACK-UP PROGRAM

Chipmunk	$ 29.77

ACCOLADE

Dam Busters	$ 17.90
Fight Night	$ 17.90
Hardball	$ 17.90
Law of the West	$ 17.90

XLENT SOFTWARE

First XLENT Word Processor
Miniature Golf
Rubber Stamp

ST SOFTWARE

M-Copy	$ 47.97
M-Disk	$ 23.97
M-Dupe	$ 17.97
Major Motion	$ 23.97
Mi-Term	$ 29.97
Michtron BBS	$ 29.97
Michtron Utilities	$ 35.97
Mighty Mail	$ 29.97
Mission House	$ 23.97
Mud-Pies	$ 17.97
Personal Money Management	$ 29.97
Pinball Factory	$ 23.97
Pro Football Wizard	$ 23.97
VIP Professional	$ 94.77
Personal PASCAL	$ 44.97
Person Prolog	$ 53.97
Autoduel	$ 30.97
Data Manager ST	$ 47.97
Super Graphics ST	$ 29.97
Swiftcalc St	$ 47.97
Sylvia Porter	$ 47.97
Sylvia Porter Vol 2	$ 47.97

OKIDATA

Okimate 10	$124.77
Okimate 20	$134..77
Okimate 120	$224.77
Plug-N-Play	CALL

STAR MICRONICS

NX 10	$239.90
LU 1210	$199.77

DISKETTES

Sony DSDD 5¼"	$ 9.97
Memorex DSDD 5¼"	$ 8.97
Precision DSDD 5¼"	$ 7.97
Bonus by Verbatim DSDD 5¼"	$ 6.97
Sony 3½" DSDD	$ 25.50
Sony 3½" SSDD	$ 19.50
Winners 3½" DSDD	$ 24.00

MONITORS

Samsung 12" Green	$ 47.77
Nec 1225 Color	$124.77
Goldstar 12" Color	$127.77
Monitor Cable	$ 5.77
Samsung 14" Color	$139.77
Sentrek 12" Amber	$ 59.79

BRODERBUND

Karateka	$ 17.00
Printship	$ 25.90
LIB 1/2/3	$ 14.90
Companion	$ 24.90
Bank St. Writer	$ 32.90

SYNAPSE

Syncalc	$ 32.77
Synfile +	$ 32.77
Templates	$ 14.77
Synchron	$ 32.77
Syntrend	$ 32.77

ST SOFTWARE

Beatles Musicdisc	$ 11.97
Classics Musidisc	$ 11.97
Midiplay	$ 29.97
Regent Base	$ 59.97
Regent Pak	$ 29.97
Regent Word	$ 29.97
Regent Word II Gem Version	$ 59.97
Spell Checker	$ 29.97
E-Z Calc	$ 41.97
Help Calc	$ 14.97
Help-mate	$ 17.97
Helpmate	$ 23.97
Inventory Master	$ 59.97
Word Writer ST	$ 47.97
Mega Font ST	$ 23.77
Rubber Stamp ST	$ 28.77
ST Music Box	$ 29.77
Copy II ST	$ 23.77
VIP Lite	$ 49.77
Space Quest	$ 29.97
Ultima II	$ 35.97
Winnie the Pooh	$ 14.97

ST HARDWARE

520 ST Computer	$399.90
SF 314 Disk Drive	$207.77
SF 354 Disk Drive	$149.77
SCI 224 Monitor	$297.77
SCI 24 Monitor	$167.77
SM 804 Printer	$199.77

ST HARD DRIVES

Atari 20MB	$ 649.90
Supra 10MB	$ 629.90
Supra 20MB	$ 639.90
SUPRA 30MB	$ 829.90
SUPRA 60MB	$1789.90

JOYSTICKS / ACCESSORIES

WICO The Boss	$ 10.77
WICO Ball	$ 14.77
WKOS Way	$ 18.77
Kraft	$ 8.77
Recoton Big Shot	$ 11.77
5¼" Drive Cleaner	$ 8.77
5½" Drive Cleaner	$ 9.77
CRT Cleaner	$ 14.77
800 XL Cover	$ 7.77
520 ST Cover	$ 9.77
Drive Cover ST	$ 7.77
1050 Cover	$ 7.77
1025 Cover	$ 7.77
1017 Cover	$ 7.77
130 XE Cover	$ 7.77
1224 Cover	$ 11.77

ST SOFTWARE

HABA Special	$ 87.43
HABA Writer	$ 44.97
HABADEX Phonebook	$ 35.97
HABAMerge	$ 23.97
HABASpell	$ 23.97
HABAView	$ 44.97
Hippo-C	$ 44.97
Home Accountant	$ 44.97
Mailroom	$ 44.97
Professional Business Letters	$ 29.97
Golden Path	$ 23.77
Guild of Thieves	$ 23.77
Pawn	$ 23.77
Starglider	$ 23.77
Hippo Computer Almanac	$ 20.97
Hippo Disk Utilities	$ 29.97
Hippo Eprom Burner	$ 97.77
Hippo Jokes and Quotes	$ 20.97
Hippo Ramdisk	$ 20.97
HippoArt I	$ 23.97
HippoBackgammon	$ 23.97
HippoConcept	$ 53.97
HippoLedger	$ 53.97
HippoPixel	$ 23.97
HippoSimple	$ 29.97
HippoSpell	$ 23.97
HippoWord	$ 53.97
HippoWord Fonts	$ 23.97
Cambridge Lisp	$119.97
ISO PASCAL	$ 59.97
Lattice C Compiler	$ 89.97
Macro Assembler	$ 47.97
Menu	$ 17.97
General Ledger	$ 59.97
Kempelen	$ 23.97
King's Quest II	$ 29.97
King's Quest	$ 29.97
King's Quest III	$ 29.97
Payroll	$ 59.97
Series Bundle (CD,AR,GL)	$119.97

ORDERS ONLY

1-800-233-6345

ORDERS RECEIVED BEFORE 12:00 PM WILL BE SHIPPED SAME DAY.

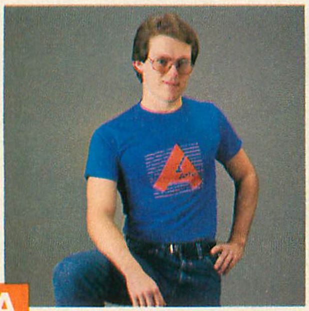
CUSTOMER SERVICE OR IN FLORIDA (305) 538-1364

FREE FREIGHT ON ALL ORDERS WITHIN CONTINENTAL U.S. OVER $100.00

Orders under $100.00 add $4.00 shipping and handling. C.O.D. orders add $4.00.
Prices reflect a 3% cash discount. All Postal orders add 6% shipping and handling. add 3% for VISA/MC
Florida residents add 5% sales tax
Personal checks allow 2 weeks for processing Prices Subject to Change Without Notice



Wear It Out!



A

T-SHIRTS. This Official Antic T-Shirt is worn by many of our staff. Made of cotton and polyester to hold their shape and good looks. Blue only. S–M–L–XL



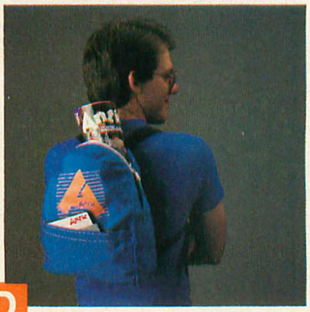
B

SWEATSHIRTS. For the cooler days this sturdy sweatshirt is made of cotton and acrylic for warm comfort and perfect fit. Blue only. S–M–L–XL



C

CAP. The Publishers special! This beautiful all-cotton cap is fully adjustable to fit you perfectly and is a favorite of the Publisher of Antic. Blue only. One size fits all.



D

BACK PACK. For your disks, printouts, school books and lunch. This 100% nylon pack has a zippered top, velcro front pouch, and adjustable straps.

RUSH Today To:
Logo/Antic
1380 Piper Drive
Milpitas, CA 95035

Name ______________________

Address ______________________

City ______________________

State ____________ Zip ____________

☐ Check or money order enclosed.

(Please allow 8–10 weeks for delivery in U.S.; Foreign orders up to 3 months.) NOTE: Foreign orders payable in U.S. dollars by International Money Order. Foreign shipments may be subject to additional shipping charges.

Please send me the following items that I've marked below:

Qty.	Item	Size (S–M–L–XL)	Price each	CA Tax each	Post. & Hand. each	Total each
	A. T-Shirts		**$ 6.50**		2.00	
	B. Sweatshirts		**$12.00**		2.50	
	C. Backpacks	——	**$ 9.50**		2.25	
	D. Hats	——	**$ 5.50**		1.50	

TOTAL ENCLOSED ____________

GUARANTEE: Any item may be returned in perfect condition within 10 days for full refund.

Payment by check or money order.

Atari News Update

XE Game System, New Fair Dates

BY THE ANTIC EDITORS

XE GAME SYSTEM

More details are now available about Atari's 64K **XE Game System** (under $150) which **Antic** first wrote about in the May 1987 issue. The Game System is essentially a two-piece 65XE computer—with detachable keyboard and some game peripherals. It is sold with a joystick and a new video gun that "shoots" electronically at the on-screen images.

The XE Game System also comes with three game cartridges—a fast-action arcade-style game, a sophisticated computer game requiring keyboard interaction and a new shooting game for the video gun.

The full XE Game package premiered at the February International Toy Fair in New York and was received enthusiastically by dealers. It is expected on store shelves in autumn 1987.



The XE Game System hooks up to your television set or video monitor. A standard XE disk drive may be purchased separately for $99. Atari is also marketing the original 2600 game cartridge player for under $50 and the more powerful 7800 system for under $90.

ATARI FAIR UPDATE

Here are our latest updates to the **Antic** January 1987 list of Atari Fairs coming this year. In May, the Atari Corp. will help local users groups put together fairs in three cities.



DAL-ACE and the North Texas ST Users host an Atari Fair at Dallas Infomart May 8-9. The Seattle Center FLAG Pavillion is the site of a fair on May 16-17, hosted by five Seattle users groups. The Boston Computer Society's Atari User Group hosts a fair May 27-28 at Worcester Centrum in Worcester, Massachusetts.

This summer, Chicago-area users groups including SCAT, CLAUG and LCACE will host an Atari Fair July 25-26 at the Ramada Hotel O'Haire in Rosemont, Illinois. MAGIC (Michigan Atari General Information Conference), Genessee Atari Group and ST Users Group, will host a fair at the Southfield Civic Center in Detroit, August 29-30.

September 19-20 takes Atari to its second consecutive Southern California fair at the Glendale Civic Auditorium, sponsored by ACENET. NOVATARI's Atarifest has been set for October 17. The location is not yet final and, at this writing, NOVATARI (Northern Virginia Atari Users Group) will host the fair independently for a third consecutive year.

See ANTIC ONLINE on CompuServe for up-to-the-minute changes and additions to the 1987 Atari Fair schedule, plus all the other latest Atari news.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **180** ON THE READER SERVICE CARD.

Chicago's CLAUG

Helping at Atari's CES booths

BY GREGG PEARLMAN, ANTIC ASSISTANT EDITOR

CLAUG, the ChicagoLand Atari Users Group, is one of the major users groups in the Chicago area, along with SCAT (Suburban Chicago Atarians) and the Lake County Atari Computer Enthusiasts in Waukegan. CLAUG was originally the Atari SIG of a multi-computer society called CACHE (Chicago Atari Computer Hobbyists Exchange). It went independent as the Atari Computer Users of Chicago in 1981.

"We started with only about 30 to 50 members," says CLAUG corporate secretary Chuck Schwark. "After two years on our own, the group became the ChicagoLand Atari Users' Group, Inc., in 1983. Now, with over 230 members, we believe that CLAUG is the largest and oldest group in Illinois devoted entirely to Atari computers. Our membership grows by an average of 7 to 15 new members a month."

Schwark is also the database manager for the group, taking care of attendance and membership files, and the editor of the monthly newsletter. "I edit and paste up the master galleys and print the label sheets," he says. "Then I send it to one of the assistant newsletter editors who makes photocopies. We exchange newsletters with users groups around the country, as well as in Canada, Switzerland, Germany, Panama, South Africa, Poland and Spain."

Since 1985, CLAUG has been one of the groups invited by Atari Corp.



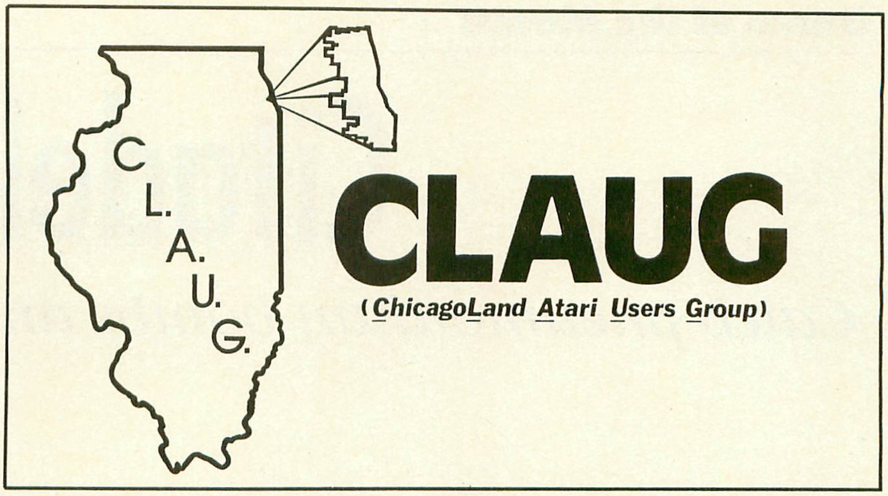
Gerry Feid

Atari president Sam Tramiel (left) presents the first 520ST released for the US consumer market to ChicagoLand Atari Users Group president Peter Pacione at the June 1985 Consumer Electronics Show.

to help man its booth at the Summer Consumer Electronics Show (CES) held in Chicago each June. In 1985, for CLAUG's efforts at the show, Atari president Sam Tramiel presented CLAUG with the first 520ST system delivered to anyone but software developers.

"Since we *are* in Chicago," says Schwark, "and a lot of our board, including myself, work in the electronics or computer fields, we normally attend CES anyway. We said we could help, one thing led to another, and we started helping at the show by doing basically grunt work and running some of the booths. This worked out pretty well. There are usually 10 or 12 volunteers."

CLAUG doesn't hold its own computer fairs or events, but it does run a demonstration booth at Computer Central, a local bi-monthly computer fair. There CLAUG distributes membership forms, answering questions and generally gaining exposure.



"We recently began sponsoring a project at Children's Memorial Hospital in Chicago," says Schwark, "and our vendors have donated software and hardware to the hospital for the kids. Atari donated a couple of computers, while Spinnaker and other third-party vendors have donated a great deal. Now the Child Life and Child Psychiatry departments each have two complete systems."

CLAUG volunteers donate their time to instruct the kids on software operation and hold question-answer sessions. They have also taught hospital staff members how to use the Atari.

"We don't do a lot of things with the general public, but we are one of about six groups who formed a consortium to run the Midwest Atari Fest in July," Schwark says. The groups include SCAT and MILATARI out of Milwaukee.

MEMBERSHIP

CLAUG covers metropolitan Chicago and the six "Collar County" areas, with a few members out of state or overseas. Collar Counties include most of the northeast quarter of Illinois. CLAUG serves about 800-900 square miles, within a 100-mile radius from Chicago. It has some 230 family memberships paying $15 annually.

Most members are business and professional people. The group doesn't have many young adult members, but quite a few family members bring children to the meetings. There's no special interest group for the kids, but enough youngsters attend to get together separately and show off their programs.

Many of CLAUG's seven new monthly members are ST owners or first-time computer users. "I think that what attracts them most is hearing that Atari's still alive," says Schwark. "They may have had an 800 sitting in the closet for two years because retailers told them, 'Atari's dead, we don't sell any merchandise for it, so why not buy this IBM clone?' But now the Atari dealers attract new visitors who see all this new hardware and software that's been developed, and it's sort of like Christmas."

Four or five local Atari dealers set up tables at the meetings of CLAUG and the other user groups in the area. CLAUG requests a minimum 1/4-page newsletter ad for participation.

CLAUG's ST SIG has recently appointed a 16-bit Public Domain Librarian. CLAUG already has a large 8-bit public domain library and a hardware library including a couple of 810 disk drives, an 800 computer, modem, touch tablet, 40-column printer and 850 interface, as well as that color ST system from the '85 CES.

"Although there may be some groups that say they're larger, we believe we're one of the largest, if not *the* largest, in Illinois," says Schwark. "Since the average family in the group has 1.2 children, according to our survey in the June 1986 newsletter, we've got maybe another 20-25% above membership numbers. And the average household has 1.9 computers."

BBS

CLAUG I is a 24-hour, public-access BBS that doesn't require passwords. It has 8.5Mb of download capacity and is run on a 130XE with a 1Mb RAMdisk, with BASIC XL and MYDOS. Disk storage is on four TEAC 77-track, double-sided, double-density drives and four TEAC 80-track double-sided, double-density drives with 26 sectors per track. All this equipment is owned by CLAUG president Pete Pacione.

The BBS gets an average of 200-300 calls a week and has now answered over 60,000 calls. It's very busy, and not easy to log onto. The BBS runs itself 24 hours a day and sysop Pacione looks in on it occasionally to make sure the modem lights are still blinking and the disk is still whirring.

CLAUG SURVEY

In a poll of CLAUG members, 30% of the membership owns STs (up from 22% in June, 1986) and about 10% of these ST users also own 8-bit computers. The 800XL and 130XE are the most widely used 8-bit computers, and the most popular disk drive is the Atari 1050. CLAUG averages 2.1 disk drives per member. Some 40% of CLAUG members spend over $500 annually on their computer interests, and 26% spend more than $250.

Programmers constitute 80-85% of CLAUG. The most popular ST language is C ("all flavors"), and the most used 8-bit languages are BASIC, assembly and Forth.

Epson and Gemini are the most used printers. The most common modems are the Atari 1030 and XM301, as well as the MPP/Supra models. In fact, 94% of the members own modems and 25% of the members use commercial online services.

The kinds of software most widely used by members are ranked here in order of importance:

1. Word Processing
2. Entertainment
3. Educational
4. Business/Financial
5. Programming
6. Communications
7. Database Management
8. Personal Finance
9. CAD/CAM

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **156** ON THE READER SERVICE CARD.

Citadel

Catch pneumonium bombs and save the world

BY HEATH LAWRENCE



Robert Kopecky

Pneumonium bombs are falling fast—catch them before they clobber you. This fast-action joystick game in BASIC works on all Atari 8-bit computers of any memory size, with disk or cassette.

The evil Commander Bardrudius failed in his efforts to enslave the people of Earth, so he decided to destroy it city by city. Bardrudius has ordered his sub-orbital shuttles to tow massive racks of pneumonium bombs across the sky and drop them.

As a bomb's timing mechanism reaches zero, it will descend towards the Citadel far below. These bombs fall erratically and the Citadel's defenses can't anticipate the point of impact.

Your mission: Control a maneuverable energy shield to intercept and absorb the bombs before they explode. The Citadel—indeed, the future of life on Earth as you know it—is in your hands.

> *The higher the skill level, the lower the bombs start to zig-zag—watch out!*

GETTING STARTED

Type in Listing 1, CITADEL.BAS, check it with TYPO II, and SAVE a copy before you RUN it. If you have trouble typing the special characters in lines 490-510, don't type them in. Listing 2 will create these hard-to-type lines for you. Type in Listing 2, check it with TYPO II and SAVE a copy before you RUN it. When RUN, Listing 2 creates a disk file called LINES.LST. To merge the two programs, type NEW, then LOAD CITADEL.BAS and ENTER LINES.LST. Be sure to SAVE a copy of the completed program before you RUN it.

PLAYING THE GAME

You'll be prompted to select a skill level (1-3) with the joystick. The skill level determines the height at which

the bombs start to move straight instead of zig-zagging. The computer creates the playfield and a Bardrudius shuttle places bombs at the top of the screen.

Bombs drop randomly, one at a time. If you catch a bomb, you'll absorb it and win five points. Clearing a whole rack earns 25 bonus points. But miss a bomb with your shield, and the number of impacts increases by one. If that number reaches five, you've failed in your mission, and the game is over. If you want another crack at Bardrudius, press [START].

Even if you do clear the rack, that doesn't mean Commander Bardrudius will give up. He'll send out rack after rack of bombs for you to tangle with.

HINTS

Start at skill level 1. The bombs start moving randomly at a higher altitude, so you have a better chance of catching them. Once you've practiced, you'll be ready for the next two levels. To pause the game or continue a paused game, press [CONTROL] [1].

Heath Lawrence lives in Port Elgin, Ontario, and has been programming on his Atari 800 for about five years. His two previous **Antic** *programs are Cliffhanger (November, 1986) and Vectron (March, 1987).*

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **177** ON THE READER SERVICE CARD.

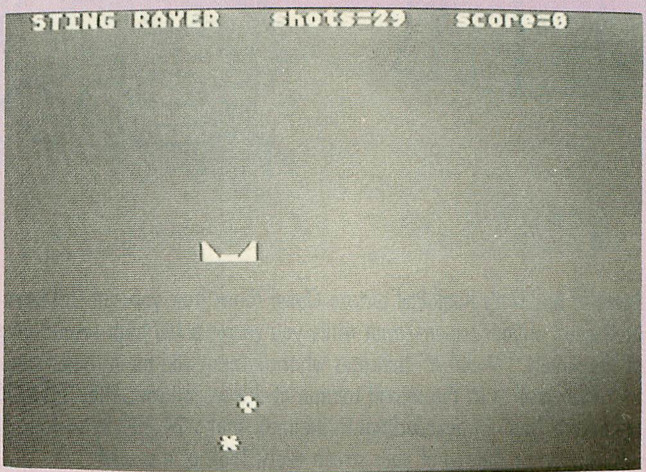
Listing on page 90

Bonus Game

Sting Rayer

PROGRAM BY STEVE ARGYLE

Sting Rayer is a quick shoot-em-up that gives your tie-fighter a session of none-too-easy target practice. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.



Sting Rayer is a short program that offers a complete, interesting game of arcade space action. (The **Antic** technical staff condensed it even more.) Just use your joystick to position a tie-fighter in line with the target, and press the fire button. Each hit scores at least 100 points, and you have 30 shots before you run out of ammunition.

To play Sting Rayer, type in STINGRAY.BAS, check it with TYPO II and SAVE a copy before you RUN it. The only special characters are those used to create the tie-fighter and the target. Happy hunting.

Steve Argyle is the nine-year-old son of Bruce Argyle, MD—creator of Mad Scientist Software's Cardiac Arrest! simulator (reviewed in **Antic***, May 1987).*

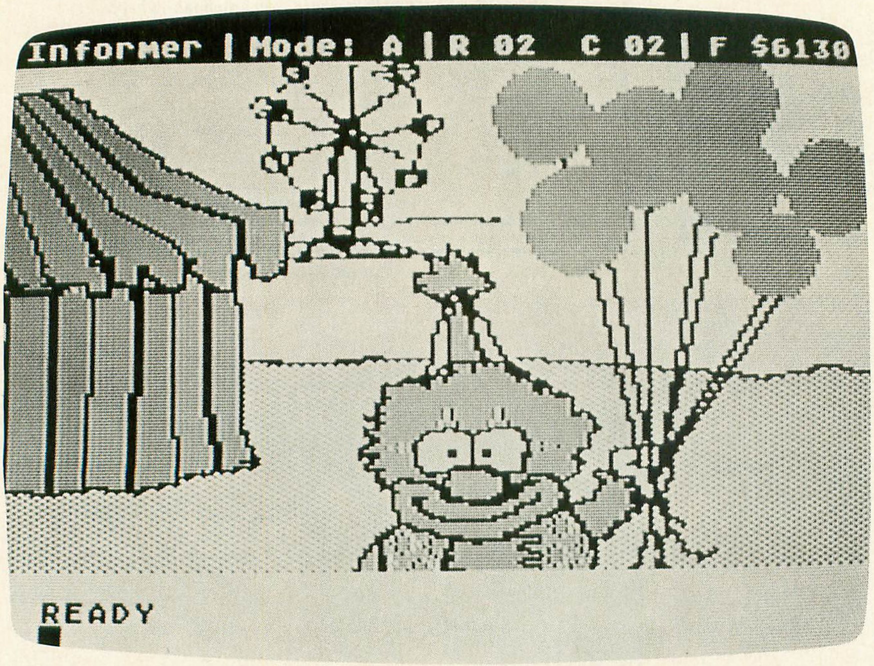
IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **179** ON THE READER SERVICE CARD.

Listing on page 91

Page 6: The Informer

Look through BASIC Status windows

BY MATT LOVELESS & MIKE EGGERS



Jennifer Brabson's KoalaPad picture *Clown* shows how you can still have the text of Informer line at the top of your screen—even while you've got a *full* high-resolution picture filling up the rest of the screen. "Mode: A" indicates what all input will be in upper-case. "R 02 C 02" tells you that the cursor is in the second column of the second row. The "F $6130" tells you how much memory is free—in hexadecimal.In decimal, that's 24,880 bytes free. The Informer updates the information at the top of your screen every 1/60 of a second.

The Informer puts a four-item status line into the screen display of your BASIC programs. You'll see your current row, column, memory available and caps/ulc mode. This final installment of the Page 6 Grab-Bag is a BASIC program that works on all 8-bit Atari computers of any memory size, with disk drive.

The third and final installment of our Page 6 Grab-Bag series is a single program, The Informer, that creates a single-line "text window" in your 8-bit Atari and lets you see the current [SHIFT]-[CAPS] mode, the cursor row and column, and the amount of free memory left for your BASIC program.

(*Page 6 is a 256-byte block of memory extending between locations 1536 to 1791—$0600 $06FF in hexadecimal. "Protected" from the operating system and BASIC, Page 6 provides a safe homebase for fast, powerful machine language routines which can be called from your BASIC program. NOTE: See this issue's HELP section for a line that was accidentally left out of Listing 3 in the March 1987 installment!*—ANTIC ED)

The Informer places a status line above your standard screen display. The information there is updated sixty times per second. From left to right, the line provides the following information:

MODE indicates the current [CAPS]-lock status. If you press [SHIFT] and [CAPS], a letter "A" is displayed, indicating all input will be in upper-case. Similarly, an "a" indicates lower case,while a heart character [♥] is shown when all key-presses are to be interpreted as [CONTROL] characters. This occurs when you press [CONTROL]-[CAPS]. MODE also in-

dicates whether input is in inverse video or normal mode.

ROW, COLUMN shows the current cursor position. In addition to the GRAPHICS 0 cursor, the position of the invisible graphics cursor is displayed as well. Note that in GRAPHICS 7 or 8, garbage will appear here if a number is greater than 40.

FREE provides a hexadecimal display of how many free bytes of memory are available to the BASIC programmer. Free memory is calculated by subtracting the value of MEMTOP (top of memory) from LOMEM (bottom of memory).

MEMTOP is a two-byte pointer to the top of BASIC memory. To determine MEMTOP, take the value found in memory location 145 ($91) and multiply it by 256. Add this number to the value found in location 144 ($90). In other words:

MEMTOP = PEEK(145) * 256 + PEEK(144)

LOMEM may be calculated similarly using memory locations 128 and 129 ($80, $81). LOMEM is maintained by BASIC and must not be confused with the operating system's MEMLO.

Once invoked, The Informer stays at the top of the screen until the computer is turned off, or the Deferred Vertical Blank vector (VVBLKD, locations 548-549 ($0224-$0225) is reset.

If you switch screen modes, The Informer's status line will redraw itself at the top of the new display. Even pressing [RESET] will not disturb The Informer. And since it sits above the screen that Atari uses, The Informer will not hamper program operation.

The Informer status line disappears during time-critical periods such as disk I/O. It reappears, updated and ready to go, when the critical period is over. This line replaces one of the BLANK 8 LINES instructions in the ANTIC display list. You can disable The Informer by pressing [OPTION][SHIFT]-[RESET]. Reinstate it with [SHIFT]-[RESET]. This routine will not work with the Atari Editor/Assembler cartridge because the cartridge squelches all deferrred vertical blanks.

Type in Listing 1, INFORMER.BAS, and SAVE a copy before you RUN it. When RUN, this program creates a disk file called INFORMER.EXE, which is the final machine language program.

To use The Informer, copy INFORMER.EXE to another disk (make sure the disk has the DOS.SYS file on it!). Next, change the name of INFORMER.EXE to AUTORUN.SYS. Now, re-boot your Atari with this disk, and The Informer will appear.

Listing 2, INFORMER.M65, is the MAC/65 assembly language source code. You do *not* need to type in this listing, as it is provided for your information. Antic Disk owners will find INFORMER.EXE and INFORMER.M65 on their monthly disk.

Cousins Matt Loveless and Mike Eggers were both in their mid-teens when Page 6 was originally released on disk by Synapse Software in 1982.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **183** ON THE READER SERVICE CARD.

Listing on page 85

BASIC Bonanza

Powerhouse languages for 8-bit Ataris

BY CHARLES CHERRY

It's a great time to be a BASIC programmer on the Atari 8-bit computer. With three new BASICs on the market, there are now six to choose from. If you can afford it, it's worth buying them all. Each offers distinct advantages, and the cost for all six is still less than what you'd pay for a single copy of Microsoft BASIC for the IBM PC.

But for those who can buy just one or two, the decision is tough. To help you, we'll take a good look at each one. The three most important features to look for in a BASIC programming language are: compatibility, runtime packages and compilers.

KEY FEATURES

Compatibility: This is the internal similarity between languages. "Upwardly compatible with Atari BASIC" means the language can run Atari BASIC programs without any modifications.

Runtime Packages: You can't run an Atari BASIC program without either a BASIC cartridge or built-in BASIC. A runtime package will make your program run without the language. This lets other people use your programs even if they don't own the language.

Compilers: Before a program is executed, it must be translated into codes that the computer can understand. Most versions of BASIC do this each time the program is RUN. A line is translated and then executed, the next line is translated and executed, and so forth. However, a compiler translates the whole program and saves the translated version. This speeds up the execution by 10-20 times and usually produces a program that runs without the language and does not need a runtime package.

ATARI BASIC

One of the best reasons to buy **Atari BASIC** (Atari Corp., $15) is the huge collection of public domain and commercial utilities and enhancements available for it. Revision C BASIC is built into the Atari XE computers and is available in cartridge form for earlier models. If you are still using Revision A (the 400-800 cartridge) or Revision B (built into the XL computers), you should upgrade immediately. No runtime package is available, but none is needed since every Atari owner already has Atari BASIC. Several compilers are available, including Turbo BASIC XL.

MICROSOFT BASIC II

This is an implementation of the BASIC that is standard on almost all other personal computers. So consider **Microsoft BASIC II** (Atari Corp. $29.95) if you need to translate programs to the Atari from Apple II or IBM PC versions.

This BASIC is powerful, but some special Atari features aren't directly supported. For example, you must PEEK to read joysticks. Error-checking is at runtime only. If you make a typing mistake, you won't find out about it until you RUN the program.

There is no runtime package or compiler. Your programs will only be useful to others who own Microsoft BASIC II. The few advantages (mostly in string handling) are generally outweighed by the losses in compatibility, memory space and ease of use.

BASIC XL

Until the flurry of new versions, **BASIC XL** (OSS, $59) was the BASIC of choice for serious programmers. Upwardly compatible with Atari BASIC and four to five times faster, BASIC XL is a joy to use.

The Optimized Systems Software supercartridge packs 16K of language into 8K of memory space. When used with DOS XL from OSS, even more memory is free. BASIC XL has advanced string handling, graphics, I/O and program control commands. A runtime package is available in the Programmer's Toolkit along with many useful routines and examples. There is no compiler.

BASIC XE

BASIC XE (OSS, $79) has all the features of BASIC XL plus additional functions and high-speed math routines to replace the Atari's notoriously

continued on page 29

Max Seabaugh


ATARI BASIC
BASIC XE
BASIC XL
MICRO SOFT BASIC II
TURBO BASIC XL
ADVAN BASIC

FIGURE 1

BASIC FEATURES COMPARISON CHART

	Atari BASIC	Microsoft BASIC II	BASIC XL	BASIC XE	Advan BASIC	Turbo BASIC XL
Minimum System	ALL	ALL/48K	ALL	XL/XE/64K	ALL/48K	XL/XE/64K
Upward compatable with Atari BASIC	N/A	NO	YES	YES	NO	YES
Runtime package	N/A *	NO	YES	YES *	YES	N/A *
Compiler	YES	NO	NO	NO	YES	YES
Editing/Debugging						
DELETE lines	NO	YES	YES	YES	YES	YES
Auto line numbering	NO	YES	YES	YES	NO	NO
Renumber	NO	YES	YES	YES	NO	YES
Trace	NO	YES	YES	YES	NO	YES
Program Control						
IF/THEN/ELSE	NO	YES	YES	YES	YES	YES
WHILE/WEND	NO	NO	YES	YES	YES	YES
REPEAT/UNTIL	NO	NO	NO	NO	YES	YES
CASE	NO	NO	NO	NO	YES	NO
PAUSE/WAIT	NO	YES	NO	NO	YES	YES
Named subroutines/ procedures/commands	NO	YES	YES	YES	YES	YES
I/O						
Directory	NO	NO	YES	YES	YES	YES
DELETE "D:FILENAME	NO	YES	YES	YES	YES	YES
LOCK/UNLOCK	NO	YES	YES	YES	YES	YES
Binary LOAD/SAVE	NO	NO	YES	YES	YES	YES
INPUT with prompt	NO	YES	YES	YES	YES	YES
PRINT USING	NO	YES	YES	YES	EXCELLENT	NO
Strings						
Max String Length	Memory	Bytes: 120	Memory	Memory	Bytes: 256	Memory
Auto dimensioning	NO	YES	YES	YES	YES	NO
String arrays	NO	YES	YES	YES	YES	NO
String matrices	NO	NO	NO	NO	YES	NO
Find substring	NO	YES	YES	YES	YES	EXCELLENT
LEFT$/MID$/RIGHT$	NO	YES	YES	YES	YES	NO
Memory functions						
Double PEEK/POKE	NO	NO	YES	YES	YES	YES
Block MOVE	NO	YES	YES	YES	NO	YES
Set block to a value	NO	NO	NO	NO	NO	YES
130XE Expanded memory	NO	NO	NO	YES *	NO	NO
Graphics/Sound						
Extended graphics	NO	NO	NO	NO	GOOD	EXCELLENT
Player/Missile graphics	NO	NO	GOOD	GOOD	EXCELLENT	NO
Vert. blank int.	NO	NO	NO	NO	YES	NO
Extended sound	NO	GOOD	NO	NO	EXCELLENT	GOOD
Numbers						
High speed math	NO	NO	NO	YES	NO	NO
Integer math	NO	YES	NO	NO	YES	NO
Hexadecimal numbers	NO	YES	YES	YES	YES	YES
Binary numbers	NO	NO	NO	NO	YES	NO
Boolean operators	NO	AND/OR/XOR/NOT	AND/OR/XOR	AND/OR	AND/OR/XOR	AND/OR/XOR
Price	$15	$29.95	$59	$79	$39.95	FREE

*—See text

slow floating point package. On a 130XE, it allows the extended memory area to be used for data storage, freeing the main memory for very large programs.

BASIC XE requires an XL or XE with at least 64K of memory. There is no runtime package, but the BASIC XL runtime can be used for programs limited to BASIC XL functions. The BASIC XL Programmers Toolkit is compatible, but there is no compiler.

ADVAN BASIC

With **Advan BASIC** (Advan Language Design, $39.95) it's not only possible to write a high-speed arcade game, it's easy. Create effortless Player/Missile graphics, background music and vertical blank interrupts. This BASIC supports the Atari's special capabilities better than any other language. But, just as the Atari is not just a game machine, Advan BASIC is not just a game language. This is a powerful, complete implementation with advanced program control, I/O and string handling.

Advan BASIC has a compiler, so it runs 10-15 times faster than Atari BASIC. But the compiled programs require an optional runtime package in order to "stand alone." Utility packages and a new high-speed optimizing compiler (see adjoining review) are also available. Advan BASIC is not compatible with Atari BASIC and uses its own Atari-compatible DOS.

TURBO BASIC XL

Turbo BASIC XL has features that put it somewhere between Atari BASIC and BASIC XL. A public domain language by Frank Ostrowski of West Germany, Turbo BASIC XL is free. You can get a copy from your local users group or download it from a bulletin board. On CompuServe, Turbo BASIC is available with a large library of utilities and help files — just go to SIG*Atari 8-bit Data Library 3 and type BRO/KEY TURBO.

Turbo BASIC is compatible with Atari BASIC, but it runs three to four times faster when interpreted and has advanced program control and I/O commands. Using the Turbo BASIC compiler makes programs run 15-20 times faster than Atari BASIC—and it will compile Atari BASIC programs too!

No runtime package is necessary, because Turbo BASIC can be given away free along with your program. Turbo BASIC will only work on XL and XE computers with at least 64K. Ostrowski is also the author of GFA BASIC for the Atari ST, which is being distributed in the U.S. by MichTron. GFA BASIC is reviewed in this issue's ST pages.

RECOMMENDATIONS

If you're just starting out, get Atari BASIC Rev. C and Turbo BASIC XL. Beyond that, the choice depends upon what you're going to do with the language.

If you frequently modify existing programs for your own use, OSS BASIC XL and XE are very good choices. If you like animation, music, and complicated screen designs, Advan BASIC is the best bet. Need very large programs that manipulate a lot of data? A 130XE with BASIC XE is the only way to go. Whatever you choose, you can't go far wrong. All of these excellent languages are among the best BASICs available for today for *any* microcomputer.

MANUFACTURERS

ATARI BASIC
MICROSOFT BASIC II
Atari Corp.
1196 Borregas Avenue
Sunnyvale, CA 94088
(408) 745-2000
CIRCLE **185** ON READER SERVICE CARD

BASIC XL
BASIC XE
Optimized Systems Software (OSS)
1221B Kentwood Avenue
San Jose, CA 95129
(408) 446-3099
CIRCLE **186** ON READER SERVICE CARD

ADVAN
Advan Language Designs
P.O. Box 159
Baldwin, KS 66006
(913) 594-3420
CIRCLE **187** ON READER SERVICE CARD

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **188** ON THE READER SERVICE CARD.

ADVAN OPTIMIZER

Advan Language Systems
P.O. Box 159
Baldwin, KS 66006
(913) 594-3420
$24.95, 48K disk
CIRCLE **175** ON READER SERVICE CARD

Reviewed by Charles Cherry

Advan BASIC was already pretty fast. Now it's the fastest BASIC in Atari history. In our Sieve Benchmark, the **Advan Optimizing Compiler** is about four times faster than the MMG Compiler, six times faster than regular Advan, 20 times faster than compiled Turbo-BASIC XL and *120 times faster* than uncompiled Atari BASIC. In fact, it's more than half the speed of ACTION!—that's getting real close to pure assembly language.

The Optimizing Compiler also has high-speed floating-point math routines to replace the admittedly slow ones in the Atari computer. Using these routines, a math-intensive program could run faster in Advan BASIC than any other language—even assembly language.

The compiler can optimize designated sections of a program for speed. It can optimize the rest for size. By choosing your sections carefully, you can create code which is fast and compact.

The Optimizing Compiler works only with Advan BASIC—it can't be used with Atari BASIC. It does not compile automatically like the standard Advan compiler and requires an extra step. The object code produced by the compiler still requires the Advan language or runtime package to execute.

Golf Handicap Calculator

You'll have more time to improve your stroke

BY JERRY WHITE



Ward Schumaker

Calculate golf handicaps in a fraction of the time it would take to do on paper. This BASIC program works on all 8-bit Atari computers of any memory size, with disk drive.

If you're a serious golfer, you've probably driven yourself crazy more than once trying to determine your handicap. Perhaps you'd sit down with paper and pencil to write, cross out, tear, write some more, tear some more, crumple the paper and finally give up.

Calculating and maintaining a current handicap by hand is a five-step process. First, take your most recent scores—up to 20 of them—and corresponding course ratings. Second, subtract the course rating from each score—that is, determine how much each score was over par. (Most 18-hole courses are par 72.) Third, multiply the result by .95 to obtain your handicap for each round. Fourth, select the *best half* of your round handicap. And finally, calculate the average of those scores to obtain your current handicap.

You can see how this process can

be both tedious and time-consuming—a waste of hours when you might otherwise be playing golf. Therefore, why not try the Golf Handicap Calculator? You can update your scores and see your current handicap in a matter of seconds. The program stores the necessary information on disk and performs all the calculations.

TYPING & USING

Type in Listing 1, GOLFHDCP.BAS, check it with TYPO II and SAVE a copy before you RUN it. The program first looks for a data file on disk drive 1 called GOLFHDCP.DAT. A menu appears with three options—Enter Scores, Display Scores, or Save Scores and Exit. Select your menu choice and press [RETURN]. You must always press [RETURN] after entering data or making choices in Golf Handicap Calculator.

When you use option 1 to enter scores, you should enter the date of that round in the "YYMMDD" format, which makes it easier for the computer to sort by date. For example, November 1, 1986 would be entered as 861101. Then enter your score and the course rating. Some courses have unusual ratings, such as 71.5. This program allows one decimal place for such an occasion.

Then you will be given a yes/no prompt asking if the data you've entered is correct. Think before you answer, and check that information carefully. This is your *only* chance to make corrections within the program.

Only 18-hole scores can be used, so if you play at a nine-hole course, wait until you have played twice. Then enter rounds by adding your two nine-hole scores together.

With option 2, you can have a display of up to 20 of your most recent entries in descending chronological order, followed by your current handicap.

Exiting this program using option 3 saves on disk whatever new scores you have entered, and then it returns control to BASIC.

PROGRAM STORAGE

Your data is stored on disk in 20-character fixed-length records. You can use a word processor to make corrections to the disk data file as long as you maintain the 20-character record length.

Each record contains four items (fields) which are, respectively, the date, the score, the course rating and the handicap calculated by the program. If you make changes, be sure to keep each item in its proper position. If you change a score or course rating, you'll also have to change the appropriate handicap for that record.

Once you have a data file on disk, it will automatically be used as input when the program is RUN. The program and data file must reside on the same disk. To keep a handicap for more than one person, you'll need a separate disk for each.

Jerry White is a well-known professional Atari programmer who has contributed many articles to **Antic** *over the years.*

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **206** ON THE READER SERVICE CARD.

Listing on page 89

PROTECTO ENTERPRIZES

"The Computer Experts"

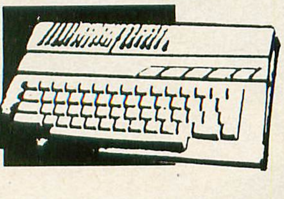
22292 N. Pepper Rd., Barrington IL 60010

• OUR WARRANTY •

Most of our products carry a minimum 90 day warranty from the date of purchase. If problems arise, simply send your product to us via U.P.S. prepaid. We will IMMEDIATELY send you a replacement at no charge via U.P.S. prepaid. This proves once again that...

We Love Our Customers!

ATARI 130 XE

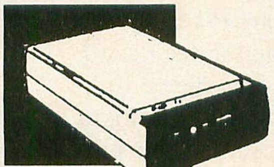


Includes 128K Ram & 24 K Rom

SALE $ 134.95

(Add $10.00 shipping) List $249

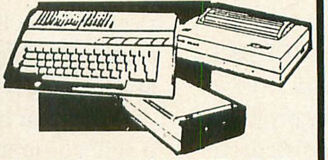
1050 127K DISK DRIVE



SALE $ 159.95

(Add $10.00 shipping) List $299

ATARI SYSTEM



Includes Atari 130 XE, 1050 Drive, Big Blue Printer, Interface and 2 Rolls of Paper.

SALE $ 299.00

(Add $25.00 shipping) List $362

APPLE IIc/IIe COMPATIBLE SYSTEM

Marvelous! Save over $700! Includes Laser 128, Big Blue Printer, Printer Interface, 12" Monochrome Monitor, Magic Window IIe Word Processor, Magic Calc Spreadsheet, Magic Memory Database and 2 Rolls of Paper.

SALE $ 499.00

(Add $35.00 shipping) List $1228

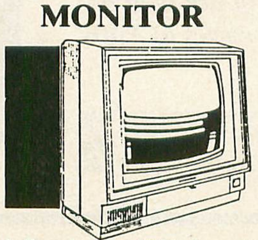
TV TUNER

Now switch your computer monitor into a television set with the flick of a switch. This Tuner has dual UHF/VHF selector switches, mute, automatic fine tuning and computer/TV selector switches. Hooks up between your computer and monitor! Inputs included for 300 ohm, 75 ohm, and UHF.

SALE $ 79.95

(Add $3.00 shipping) List $130

13" COLOR MONITOR

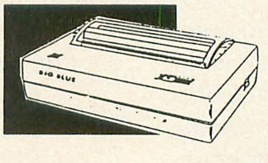


High Resolution, 1000 character display, with built in audio speaker with volume control.

SALE $ 179.95

(Add $14.50 shipping) List $329

BIG BLUE PRINTER



This is the affordable printer you've waited for! 8½" letter size, 80 column dot matrix, heat transfer printer features upper and lower case, underline, word processing, and much more.

SALE $ 39.95

(Add $7.50 shipping) List $199

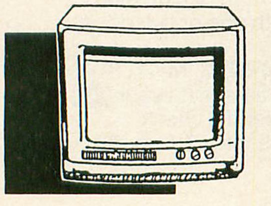
87 EP PRINTER & TYPEWRITER COMBINATION

Superb Silver Reed letter quality daisy wheel printer/typewriter, just a flick of the switch to interchange. Extra large carriage, typewriter keyboard, automatic margin control, compact, lightweight, drop in cassette ribbon! Centronics Parallel Interface port is built-in.

SALE $ 179.95

(Add $12.50 shipping) List $299

12" 80 COLUMN MONITOR

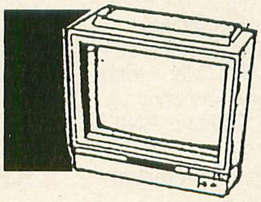


High Resolution amber or green screen monitor. 80 col. x 1000 lines at center. Non-glare screen. Works terrific with IBM, Apple and Laser business computers.

SALE $ 99.00

(Add $10.00 shipping) List $129

14" RGB & COMPOSITE COLOR MONITOR

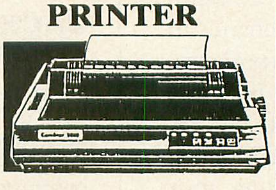


High Resolution, 80 column Monitor. Switch from RGB to Composite. (C128 - IBM -Apple) RGB cable $19.95.

SALE $ 237.00

(Add $14.50 shipping) List $399

COMSTAR 1000 PRINTER



Print letters, documents, etc., at 100 cps. Works in Near Letter Quality mode. Features are dot addressable graphics, adjustable tractor and friction feed, margin settings, pica, elite, condensed, italics, super/subscript, underline, & more.

SALE $ 179.95

(Add $10.00 shipping) List $349

160-180 CPS N.L.Q. 180 PRINTER

This printer has a Near Letter Quality button on the front panel. No more turning the printer on and off. The 8K buffer will free up your computer four times faster than conventional printers and the high speed will keep you computing more than printing. Super graphics along with Pica, Elite, Italics, and Condensed print. **Lifetime Warranty** on Print Head plus 6 month immediate replacement warranty. Centronics Parallel Interface port.

SALE $ 199.00

(Add $10.00 shipping) List $499

MasterCard

TO ORDER CALL (312) 382-5244

8 am - 8 pm CST Weekdays / 9 am - 12 noon CST Saturdays

VISA

BEST SERVICE IN THE USA • 1 DAY EXPRESS MAIL • OVER 500 PROGRAMS • VOLUME DISCOUNTS • 15 DAY FREE TRIAL • CUSTOMER LIST OF OVER 3,000,000 - LARGEST IN THE USA

FOR FREE CATALOG CALL

(312) 382-5244

PLEASE CALL TO ORDER: PRICES MAY BE LOWER & WE OFFER SPECIAL SYSTEM DEALS

FLIP—N—FILE

Dust and dirt can hurt your disks. Proper filing and protection of your disk collection will reduce unneccessary wear and tear. Over 70 disks fit in Flip-N-File.

SALE $14.95

List $24.95

JOYSTICK SALE

This Pro 5000 with microswitches has been rated No. 1 in joysticks. Arcade Quality!

SALE $16.95

List $24.95

COMPUTER CLEANERS

TV/Monitor Screen Restorer / Cleaner Kit • Disk Drive Cleaner • Anti-Static Keyboard Cleaner

*Choose any of these three computer cleaners for only $9.95 each!

SALE $9.95*

List $19.95

ATARI WRITER WORD PROCESSOR

Write papers, schoolwork, etc. quickly and efficiently with No. 1 Atari word processor w/spelling checker. Make changes with preview modes. Includes: full screen editing, double column printing, condensed, elongated, page no.'s headers-footers, margin set and more.

SALE $49.95

List $99.00

DOUBLE SIDED DOUBLE DENSITY DISK

100% Certified 5¼" floppy disks. Lifetime Warranty. 1 Box of 100 -$29.00. List $1.99 each. **.29¢ ea.**

AMER. EDUC. COMPUTER

BIOLOGY FACTS (D)	$9.95
ELEM. SCIENCE FACTS (D)	9.95
U.S. GEOGRAPHY FACTS (D)	9.95
U.S. GOVERNMENT (D)	9.95
U.S. HISTORY FACTS (D)	9.95
WORLD GEOGRAPHY FACTS (D)	9.95
WORLD HISTORY FACTS (D)	9.95
FRENCH VOCAB. SKILLS (D)	9.95
SPANISH VOCAB. SKILLS (D)	9.95
AEC SPELLING (D)	19.95
LEARN TO READ (D)	19.95
READING COMPREHENSION (D)	19.95

BLUE CHIP

TYCOON (D)	$14.95
MILLIONAIRE (D)	14.95

DESIGNWARE

TRAP A ZOID (D)	$9.95
SPELLAGRAPH (D)	9.95
MATH MAZE (D)	14.95
CRYPTO CUBE (D)	12.95
SPELLICOPTER (D)	14.95
MISSION ALGEBRA (D)	24.95
SAT WORD ATTACK SKILLS (D)	22.95
PSAT WORD ATTACK SKILLS (D)	22.95
INTRO TO COUNTING (D)	19.95

FISHER PRICE

LINKING LOGIC (C)	$9.95
DANCE FANTASY (C)	9.95
MEMORY MANOR (C)	9.95
LOGIC LEVELS (C)	9.95

SPINNAKER

DELTA DRAWING (C)	$9.95
FACEMAKER (C)	9.95
KIDS ON KEYS (C)	9.95

SYNAPSE

SYNFILE (D)	$32.95
SYNCALC (D)	29.95
SYNCALC TEMPLATES (D)	14.95

WEEKLYREADER

PICTURE BUILDER (D)	$16.95
STICKYBEAR BOP (D)	16.95
STICKYBEAR NUMBERS (D)	16.95
STICKYBEAR BOUNCE (D)	16.95
STICKYBEAR OPPOSITES (D)	16.95
STICKYBEAR ABC (D)	16.95
STICKYBEAR SHAPES (D)	16.95

ATARI SOFTWARE

ACCESS

TRIPLE PACK (D)	$14.95
LEADER BOARD (D)	22.95

ACCOLADE

FIGHT NIGHT (D)	$18.95
HARDBALL (D)	18.95

ACTIVISION

SPACE SHUTTLE (D)	$15.95
HACKER (D)	15.95
GREAT AMER. ROAD RACE (D)	15.95
GHOSTBUSTERS (D)	19.95

BATTERIES INCLUDED

HOME PACK (D)	$19.95
PAPER CLIP (D)	29.95

BRODERBUND

PRINT SHOP (D)	$25.95
GRAPHICS LIB. 1,2 or 3 (D)	15.95
COMPANION (D)	22.95
KARATEKA (D)	18.95

COSMI

CAVERNS OF KHAFKA (D)	$10.95
TALLADEGA (D)	10.95
FORBIDDEN FOREST (D)	10.95
MASTERS OF TIME (D)	10.95
SLINKY (D)	5.95
TEXT PRO/DATA PRO (D)	16.95

DATASOFT

PAC MAN (D)	$9.95
CONAN (D)	9.95
POLE POSITION (D)	9.95
DIG DUG (D)	9.95
MR. DO (D)	9.95
BRUCE LEE (D)	12.95
ZORRO (D)	12.95
GOONIES (D)	12.95
221 B BAKER STREET (D)	18.95

ELECTRONIC ARTS

AGE OF ADVENTURE (D)	$9.95
SUPER BOULDERDASH (D)	9.95
SEVEN CITIES OF GOLD (D)	9.95
ONE ON ONE (D)	9.95
PINBALL CONSTRUCTION (D)	9.95
MUSIC CONSTRUCTION (D)	9.95
RACING DESTRUCTION (D)	9.95
GOLDEN OLDIES (D)	19.95
MOVIE MAKER (D)	12.95
CHESSMASTER (D)	25.95
OGRE (D)	26.95
LORDS OF CONQUEST (D)	22.95

EPYX

500XJ JOYSTICK (D)	$14.95
BALL BLAZER (D)	12.95
SUMMER GAMES (D)	14.95
RESCUE ON FRACTULUS (D)	12.95
WORLD KARATE (D)	18.95

HAYDEN

SARGON II (D)	$9.95
SAT VERBAL (D)	14.95
SAT MATH (D)	14.95
SAT PRACTICE TEST (D)	14.95

HI-TECH EXPRESSIONS

CARD WARE (D)	$7.95
HEART WARE (D)	7.95
PARTY WARE (D)	9.95
WARE WITH ALL KIT (D)	9.95
HOLIDAY PRINT PAPER (D)	7.95

INFOCOM

MOONMIST (D)	$22.95
BALLYHOO (D)	22.95
HITHHIKER'S GUIDE (D)	22.95
WISHBRINGER (D)	22.95

PEACH TREE

GENERAL LEDGER (D)	$37.95
ACCOUNTS RECEIVABLE (D)	37.95
ACCOUNTS PAYABLE (D)	37.95

S.S.I.

SIX GUN SHOOTOUT (D)	$23.95
BATTLE OF ANTIETAM (D)	32.95
GETTYSBURG (D)	34.95
MECH BRIGADE (D)	34.95
NAM (D)	23.95
U.S.S.A.F. (D)	34.95
KAMPFGRUPPE (D)	34.95
FIELD OF FIRE (D)	23.95
CARRIER FORCE (D)	32.95
WAR SHIP (D)	3495
BROADSIDES (D)	23.95
COMPUTER AMBUSH (D)	32.95
COMPUTER BASEBALL (D)	23.95
COMPUTER QUARTERBACK (D)	23.95
COLONIAL CONQUEST (D)	23.95

XLENT

TYPESEETER (D)	$21.95
RUBBER STAMP (D)	18.95
PAGE DESIGNER (D)	18.95
P.S. INTERFACE (D)	18.95
1ST XLENT WORD PROCESSOR (D)	18.95
MEGA FONT (D)	16.95

Shipping, Handling & Insurance Information and Charges

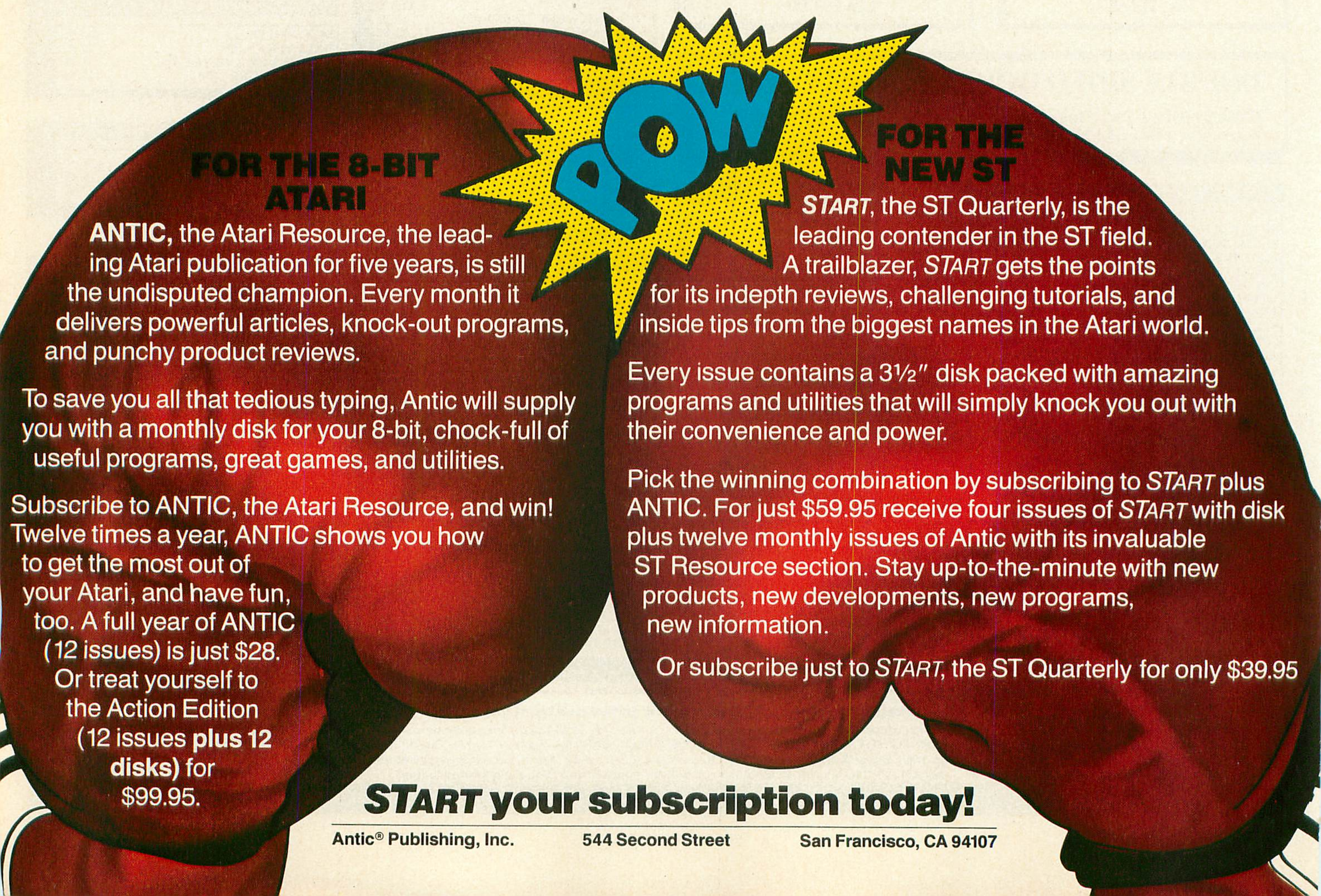
Add $3.00 (unless noted) for shipping, handling and insurance. Illinois residents please add 6½% sales tax. Add $6.00 (double the amount) for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. All orders must be in U.S. Dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice. Hardware shipping prices vary according to weight. Please call for amount.

VISA - MASTERCARD - C.O.D. No APO-FPO for Monitors. Monitors can only be shipped to 48 contiguous United States. Call for C.O.D. Charges.

CIRCLE 034 ON READER SERVICE CARD

THE ONE-TWO PUNCH IN ATARI COMPUTING

Whether you own an 8-bit Atari computer or one of the new STs, you need the power of a magazine designed especially for you.



FOR THE 8-BIT ATARI

ANTIC, the Atari Resource, the leading Atari publication for five years, is still the undisputed champion. Every month it delivers powerful articles, knock-out programs, and punchy product reviews.

To save you all that tedious typing, Antic will supply you with a monthly disk for your 8-bit, chock-full of useful programs, great games, and utilities.

Subscribe to ANTIC, the Atari Resource, and win! Twelve times a year, ANTIC shows you how to get the most out of your Atari, and have fun, too. A full year of ANTIC (12 issues) is just $28. Or treat yourself to the Action Edition (12 issues **plus 12 disks)** for $99.95.

FOR THE NEW ST

START, the ST Quarterly, is the leading contender in the ST field. A trailblazer, *START* gets the points for its indepth reviews, challenging tutorials, and inside tips from the biggest names in the Atari world.

Every issue contains a 3½″ disk packed with amazing programs and utilities that will simply knock you out with their convenience and power.

Pick the winning combination by subscribing to *START* plus ANTIC. For just $59.95 receive four issues of *START* with disk plus twelve monthly issues of Antic with its invaluable ST Resource section. Stay up-to-the-minute with new products, new developments, new programs, new information.

Or subscribe just to *START*, the ST Quarterly for only $39.95

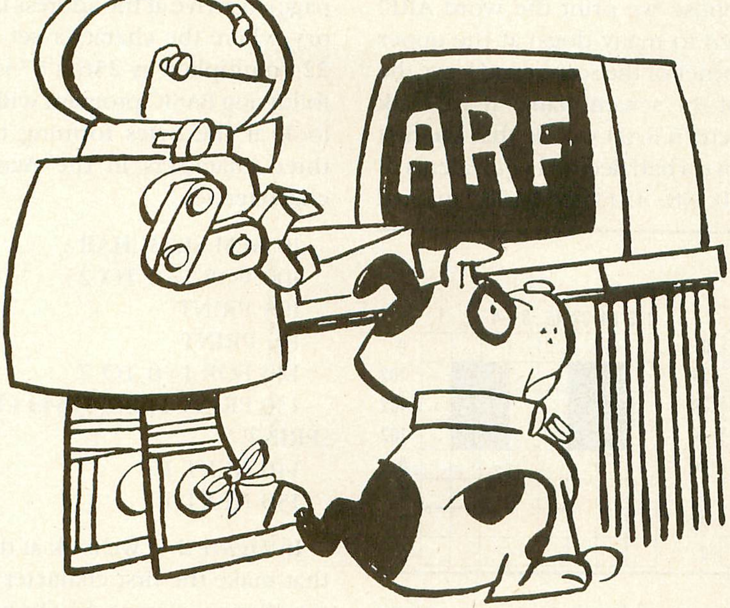
START your subscription today!

Antic® Publishing, Inc. 544 Second Street San Francisco, CA 94107

Atari Animation

Lesson 1: Character Graphics

BY ROBIN ALAN SHERER



Move into intermediate Atari BASIC programming with this in-depth series about how to make 8-bit graphics move—and how to combine your moving graphics into complete game designs. To take full advantage of these Atari Animation lessons, you should be at least an experienced BASIC beginner—and keep a good BASIC reference manual close at hand. However, any 8-bit Atari user—with minimum 32K memory, disk or cassette—can enjoy using the short BASIC graphics demonstration type-in programs that accompany each lesson.

Animation—graphics that move—has always been one of the 8-bit Atari's greatest strengths. In this new **Antic** series, we'll assemble a complete animated picture with all the trimmings. And then we'll go on to create a complete, working game in Atari BASIC that looks and plays like the classic Space Invaders.

CHARACTER GRAPHICS

The basis of most Atari animation is **character graphics**, a simple and efficient way of creating customized shapes, called characters, on the television (or video monitor) display screen by manipulating the computer numbers that control the shapes. Letters of the alphabet are characters. So are numbers and punctuation marks such as—?, /, ", etc.

Atari also provides some "special" characters that can be used to draw forms. When cleverly combined, they can create other interesting shapes, like a house or robot. These shapes are all built into the keyboard.

You can program character graphics using PRINT and POSITION statements, the same way as text. Text can be kept in strings, which BASIC handles quickly and automatically. Character graphics is very memory-efficient. For example, a high resolution Graphics 8 screen takes about 8,000 memory locations to store all

continued on next page

the "bit-mapped" numbers needed for a single screen. Using characters in the regular text mode, we can duplicate the same screen in 960 bytes of memory (40 columns times 24 rows)—and less memory also means faster execution.

You may think you are limited by having only 128 characters, but even that can be overcome by using advanced methods such as "display list interrupts," which you'll be learning about later in this series. You don't have to rework entire characters either. Often a few changes will be enough to create the graphic image you want.

As a BASIC programming beginner, you already know that a bit—the smallest unit of computer memory—can represent a dot on your display screen. These dots are called **pixels**—short for "picture elements." An "8-bit" computer like your Atari simultaneously processes groups of eight bits—called bytes. Therefore, a single byte can draw eight pixels on your screen. (You can look at the memory locations of any of the more than 64,000 bytes in today's 8-bit Ataris with a simple PEEK command from BASIC.)

Every Atari character actually consists of a grid that's eight pixels wide and eight pixels high—or 64 (8×8) pixels. By varying the pixel-dot pattern of each byte and stacking them, we form an image. *Figure 1* shows the 64-pixel character grid for the letter A. To create this character, you would add up the binary value of each bit, as shown in the diagram, and POKE those numbers into memory.

Do we need 960 bytes of memory (40 x 24) to store a screen in the computer—or do we actually need 960 characters at eight bytes apiece (7,680 bytes)? The answer is 960 bytes. Here's the secret: Within the computer a whole letter can be stored as just one number. Then every time we need a letter, we just use that number instead. We don't have to describe how to draw a letter every time we want to use it.

The memory area that holds data for the screen display is called screen RAM, or screen memory, or screen data. Use whichever term you like best. We can place letters on the screen by placing single numbers into this area. We just have to tell the computer we want an "A" printed at a particular location and also where the computer should look in ROM to find those bytes that make up the letter A.

Suppose we print the word ARF! (known to many dogs) at the upper left corner of the screen and leave the rest of the screen blank. If we look into screen RAM we see that the first four bytes had decimal equivalents of 33, 50, 38, 1. Every BASIC manual will have a table containing numbers called **screen display codes.** These are the decimal values for character shapes.

PAGE MEMORY

Memory is addressed in **pages** (also called the high order address, or "high byte") and **free bytes** (called low order address, or "low byte"). A page is 256 bytes of memory and free bytes is anything less than a page. We will be doing many things requiring us to work in pages of memory, just like reading a book.

A memory location called the **character base pointer** contains the high order address byte which points to the beginning of the character set

FIGURE 2
First Three Characters in ROM

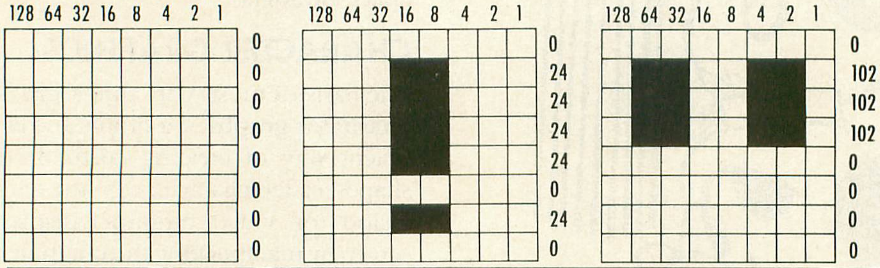
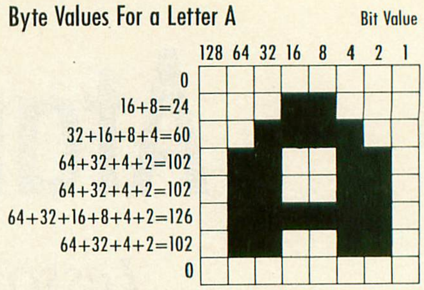


FIGURE 1
Byte Values For a Letter A



in ROM. It's location 756 of system RAM, which is reserved for the computer's own use.

When you're in BASIC you can execute a PRINT PEEK(756) statement and see the location's contents. Since it's the high order address byte (representing 224 pages of memory), we must multiply it by 256 (bytes per page) to arrive at the address in memory where the character set resides. 224 multiplied by 256 is 57344. The following BASIC program will let you look at the bytes forming the first three characters in the Atari ROM character set.

```
10 REM SEE3CHAR
100 FOR I=0 TO 2
105 PRINT
110 PRINT
120 FOR J=0 TO 7
130 PRINT PEEK(57344+I*8+J);
:PRINT " ";
140 NEXT J
150 NEXT I
```

In *Figure 2*, if we look at the bytes that make the first character we notice they are all zero. You've probably guessed that they produce a blank space. The next two characters are the exclamation point and quotation mark.

If you look at the ATASCII table in your Atari BASIC manual, you'll see the characters listed in decimal order. (See list of recommended books at end of article.) However, ATASCII decimal order is *not* how characters are arranged in ROM. Atari chose a different order to make life easier for themselves when they set up their method of selecting both upper and lower case letters in GRAPHICS modes 1 and 2. However, this makes it harder on us.

ATASCII decimal values 32-95 are

the first 64 characters in ROM. ATASCII decimal values 0-31 occur in positions 64-95—but decimal values 96-127 represent their true positions in ROM. A simple statement in BASIC will compensate for this weird arrangement:

```
1040 N=C-(C>31 AND
C<96)*32+(C<32)*64
```

Here C is the ASCII value of the character. The expession (C>31 AND C<96) will return a value of 1 if true, or 0 if false. This gives a result of either 32 or 0 (32*1 or 32*0). The same logic applies to the second expresson. The first and second expressions are mutually exclusive. Only one or the other can be true. If neither is true, then the result of both expressions is 0 and N will equal C.

To find the position of the first byte of a character, multiply N by eight bytes and add the result to the beginning address of your character set.

Figure 3 shows the whole process. This example uses the character A, which is the thirty-third character in the set. What you see is the binary pattern of the bits. The decimal equivalent is obtained by adding the "on" bits in each horizontal row, starting from the first number of the character set's description in memory (located at CHBAS or PEEK(756)*256).

Since we need 8 numbers per character, and "A" is the thirty-third character in our sequence, we must go down 33*8 numbers to find the eight numbers which make up an "A".

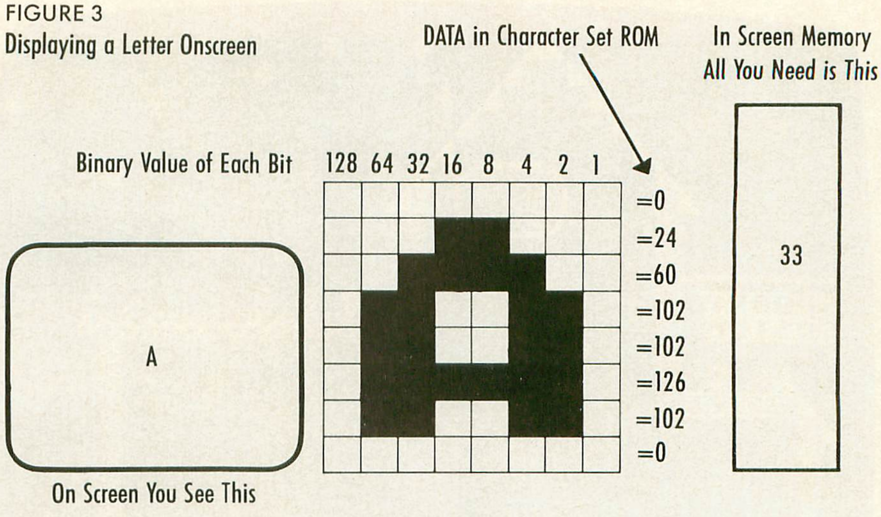
Placing the A on the screen, we end up with just the number 33 in screen memory and we see the A onscreen. We're using one byte instead of 8!

Character graphics is not strictly limited to letters and numbers. If we change the eight values which tell your Atari what an "A" looks like, we can turn the "A" into a "V", a box, a face, the head of a robot, or anything we like.

There's one trick, though. We can't change your Atari's **internal character set**—it's permanently etched in ROM. Instead, we copy the ROM character set into RAM and make our changes to this *copied* set. Finally, we give your Atari the address of your new character set, and POKE the high byte of that value into location 756. (For reasons we will discuss later, this address *must* be evenly divisible by 512!)

Try POKEing different values into 756. The screen will look strange as your character set tries to look like various areas of memory. When you're done, press [RESET] or POKE 756,224 to restore things to normal.

FIGURE 3
Displaying a Letter Onscreen



Now we can look at ways to place characters on the screen. Try this first:

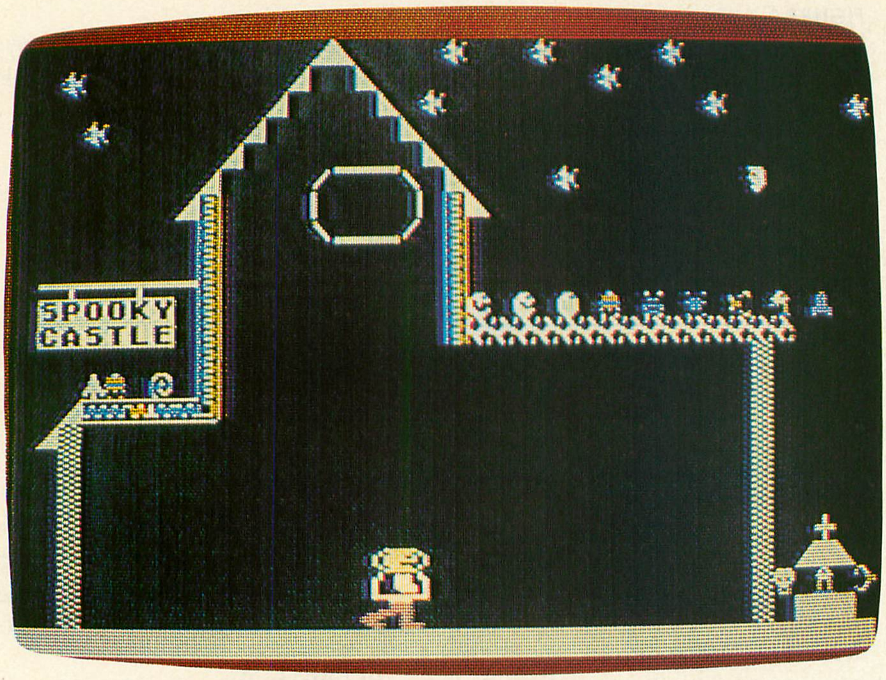
```
10 PRINT "A"
```

If you didn't already know how to do this, then the entire article is too advanced for you. For colored letters a little larger than normal:

```
10 GRAPHICS 120:PRINT #6; "Aa"
```

(Try substituting inverse and lower-

continued on next page



A creative animator can form almost any image with the Atari's special characters

case-inverse letters into the above line, and watch the colors change.)

POKE THE SCREEN

Sometimes you might want to POKE the screen codes for each character directly into screen memory. Here's one way to find the beginning address of screen memory. Type NEW, then type:

```
10 SCRMEM=PEEK(88)+256*
PEEK(89)
```

Now that we've found the beginning address of screen memory, let's POKE a letter there. Add this line and RUN the program:

```
20 POKE SCRMEM, 33
```

Bingo! An A in the upper left corner of the screen. The internal code for an A placed in the right place in memory gives you an A on the screen. When POKEing memory, you use the internal code. Let's look at the whole character set. Overlay these program lines and RUN the program:

```
5 GRAPHICS 0
20 POSITION 2,15:PRINT
"POKEing"
30 FOR X=0 TO 255
40 POKE SCRMEM+X,X
50 NEXT X
```

This gives you all 128 characters onscreen and then the inverse of each. You can place characters anywhere in memory directly.

Another way to put characters onscreen is to PLOT them there in a text mode:

```
10 GRAPHICS 1
20 COLOR(33+160)
30 PLOT 5,7
```

This places a blue A in position 5,7. The method is discussed on pages 276-278 of *Your Atari Computer*. (See list of recommended books at end of article.)

ANIMATION

You are now ready to animate some characters. Just use one of the above techniques to change characters in the same place on the screen. This little program example will animate ABC. Type NEW and then type:

```
10 GRAPHICS 0
20 POSITION 10,10
30 PRINT "A"
40 POSITION 10,10
50 PRINT "B"
60 POSITION 10,10
70 PRINT "C"
80 GOTO 20
```

This will go pretty fast. We can control the speed with a delay loop. A simple FOR-NEXT loop will do. Add these lines:

```
5 DELAY=100
35 GOSUB 100
55 GOSUB 100
75 GOSUB 100
100 FOR I=1 TO DELAY:
NEXT I:RETURN
```

To control the speed, change the value of DELAY in line 5. Now the effect isn't too exciting with ABCs, so let's begin learning how to animate a complete picture. In the next few lessons, we will gradually assemble an animated sequence with a little robot walking through a haunted house, complete with sound effects. This first module simply uses the PRINT statement to place characters around the screen and form the basic picture.

Type in Listing 1, HAUNT01.BAS, check it with TYPO II and SAVE a copy before you RUN it. Antic Disk owners will also find the complete animated sequence on their monthly disk as HAUNT.BAS.

Feel free to change any characters you want. All the pictures in these lessons are yours to experiment with and improve.

Robin Sherer co-authored the well-known Atari programming books Tricky Tutorials, Master Memory Map for the Atari, BASIC Arcade Graphics Design *and* Atari Game Design. *He is currently a programmer at Boeing Aircraft in Seattle.*

RECOMMENDED BOOKS:

Your Atari Computer by Lon Poole, Osborne/McGraw-Hill.

Mapping The Atari by Ian Chadwick, Compute! Publications, Inc.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **202** ON THE READER SERVICE CARD.

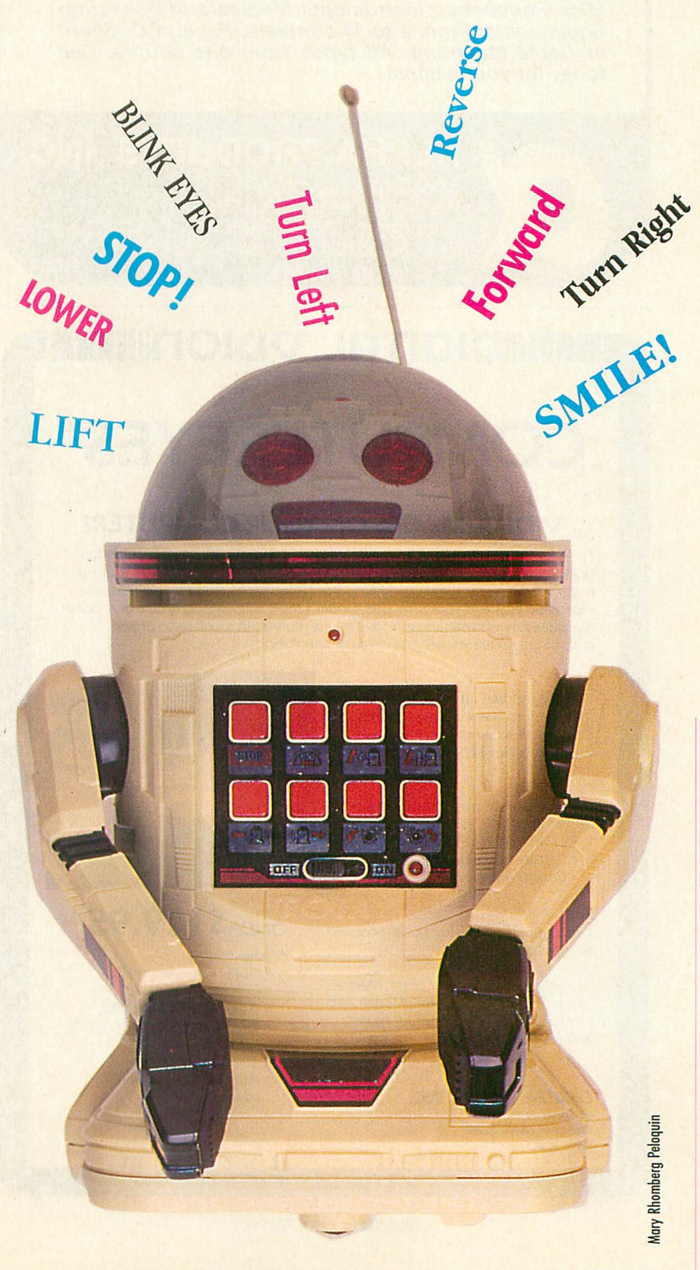
Listing on page 88

Verbot Commander

Atari "talks" to your robot

BY ALBERT BAGGETTA

Verbot Commander program gives you one-touch Atari keyboard sounds to control your Verbot toy robot. This BASIC program works on all 8-bit Atari computers with minimum 32K memory and disk drive.



Mary Rhomberg Peloquin

Tomy's nine-inch-tall Verbot robot has been a popular toy for two Christmases now. Selling for less than $60, the Verbot is packed with electronics allowing it to move in response to voice or sound commands. It's great for all ages and an interesting device for experimenting with robots and voice synthesis. Verbot won't get you the evening paper or bring you breakfast in bed, but it will provide hours of entertainment and educate your children about robotics at a reasonable price.

Verbot is meant to be operated by voice commands, but you'll soon find out how tedious it can be to try making Verbot recognize your voice. You must enunciate very precisely because Verbot "memorizes" the patterns of the commands and insists that you repeat the sounds exactly.

This is where Verbot Commander comes in. By using your Atari computer to generate specific sounds, you can repeat them exactly as they were entered into Verbot's memory. So take Verbot out of the box, dust it off, charge it with fresh batteries, and have some fun.

GETTING STARTED

Type in Listing 1, VERBOT.BAS, checking with TYPO II, and SAVE a copy before you RUN it. While you're waiting for the Commander to load, place Verbot's transmitter near your video speaker and put Verbot nearby. You'll be

continued on next page

following the operation instructions in the Verbot manual. The only difference is that instead of voice you'll be using computer-generated sounds.

Verbot commander will first give you the option of loading sounds that you've already saved on disk or cassette. If you choose to create a new set of sounds, you will see a command screen similar to the one on page 8 of the Verbot manual.

Now you can program Verbot. First turn on the robot and then the transmitter. To program STOP first, hold down the first red button on Verbot's chest with one hand and with the other press the [S] key on the computer. You will hear a sound, and Verbot's "memory light" should stay on. If not, do it over again.

Repeat the process until all eight of Verbot's cells are programmed. When you're done, you're ready to command Verbot. Place the robot upright on a clear floor about 10 to 14 feet from the computer and transmitter—be sure the transmitter stays near the TV or monitor speaker. If you want Verbot to go forward, press [F]. Press the [B] key to make it go backwards. Press the other assigned keys one at a time and Verbot will follow your commands, for hours of fun.

BASIC programming enthusiast Albert Baggetta teaches English in Agawam, Massachussets and experiments with his Atari as an educational tool. Listing on page 87

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **205** ON THE READER SERVICE CARD.

Coming in July Antic

Multi-colored printouts on a standard b/w dot-matrix—New 8-bit Printer Software Roundup

J.D. Casten's 80-column display subroutine

ASCII Art to Hi-Res Converter

Secrets of Atariwriter Plus

Wild Inventions You Can Build For Pennies

From the "Rube Goldberg" of the Atari

BY THOMAS SIMMONS

It all started on page 30 of the May 1986 ***Antic*** *with the illustrated article* Repair Your Joystick, *which explained how to cure joystick pressure rings suffering from the crippling "Simmons Fracture."*

Ever since we encouraged Thomas Simmons by accepting some of his text and drawings, he has been flooding ***Antic*** *with more of his eccentric do-it-yourself projects for the Atari. If you like this batch of off-the-wall—but surprisingly practical—fix-it ideas, let us know by CIRCLING* 170 *ON THE READER SERVICE CARD. We've got plenty more where these come from.*—ANTIC ED

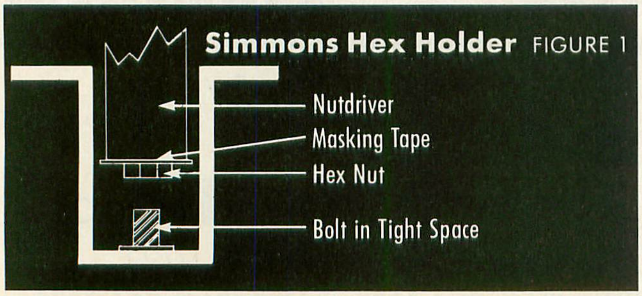
SIMMONS HEX HOLDER

Have you ever been frustrated because the hexagonal nuts keep falling out of your hex nutdriver while you're trying to put your computer back together after changing a RAM chip, or reassembling one of your peripheral devices? Don't magnetize the nutdriver, because you're asking for trouble around a sensitive computer or peripheral that can be fouled up by magnetism. There's a better way.

Here's what you'll need:

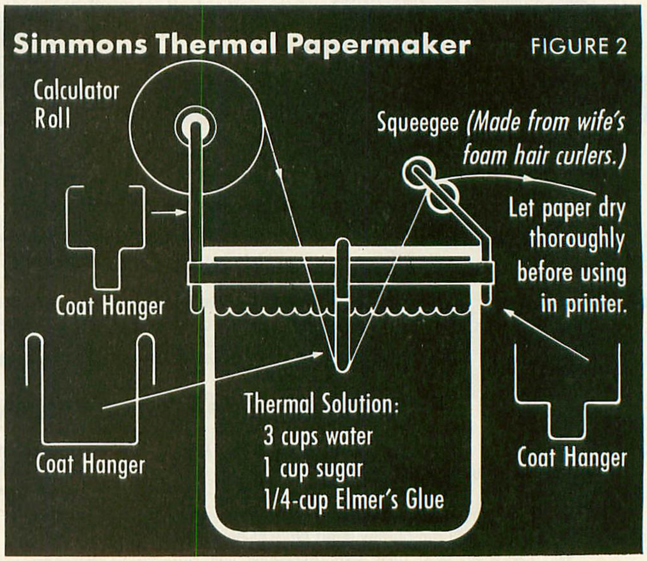
1. An unmagnetized nutdriver.
2. A hexagonal nut or screw.
3. Masking tape.
4. A tight, frustrating place.

Place a strip of masking tape over the top of the nut *Figure 1*) and then insert it into the hex nut driver. It's tight! There'll be no fallout (radioactive or otherwise), and your frustration will vanish.



THERMAL PAPERMAKER

Are you tired of looking all over town, or through those mail-order ads, for some reasonably-priced thermal printing paper? Why not make your own? *Figure 2* shows you how easy it is to assemble a Simmons Thermal Papermaker.



Buy ordinary calculator rolls in whatever width needed by your printer and dip them in the following solution:

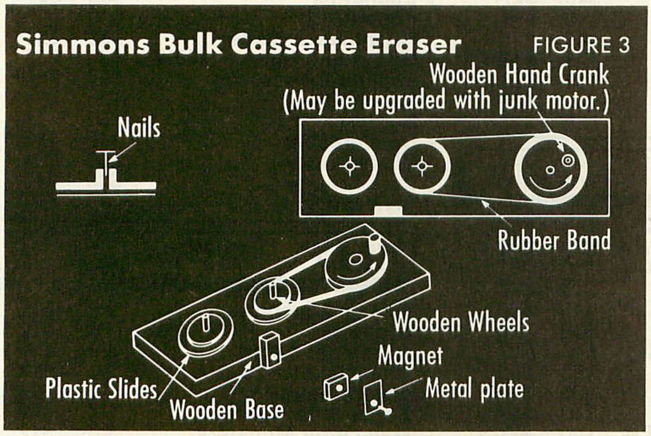
3 cups water
1 cup sugar
1/4 cup Elmer's Glue

The glue holds the sugar molecules to the paper. Why sugar? Well, as you may remember from your chemistry classes, burning sugar turns it to carbon—it's better than ink. You'll find that your homemade thermal paper has a darker printout than any thermal paper you could buy.

Be sure to clean your thermal head occasionally with

an alcohol swab. Oh, and don't eat the paper. A sweet roll it isn't.

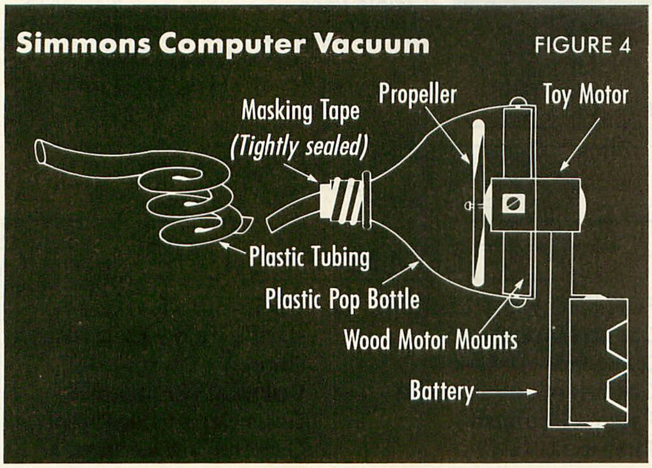
BULK CASSETTE ERASER



One main problem in storing computer data on cassettes is that if you don't thoroughly erase previous information, you might get data errors—or even lose some data. Have you ever tried to save a program to cassette, only to get error messages flashing onscreen? What about trying to load a program and getting a squeal instead of clear data transmission?

You are probably the victim of a dirty tape with interfering garbage on it that comes through with your data. But the homemade Simmons Bulk Cassette Eraser (*Figure 3*) will make your cassette tapes as good as new.

This simple bulk eraser will get rid of all the garbage and align the oxides on the tape—and you can build it for just pennies. Any cassette cartridge forms the template to get the correct spacing before you start nailing. The all-wood construction is a guarantee against "static cling." You'll be running the tape between a magnet and a metal plate. The bulk eraser is hand-cranked, but you can upgrade it with a motor from a junk cassette recorder.



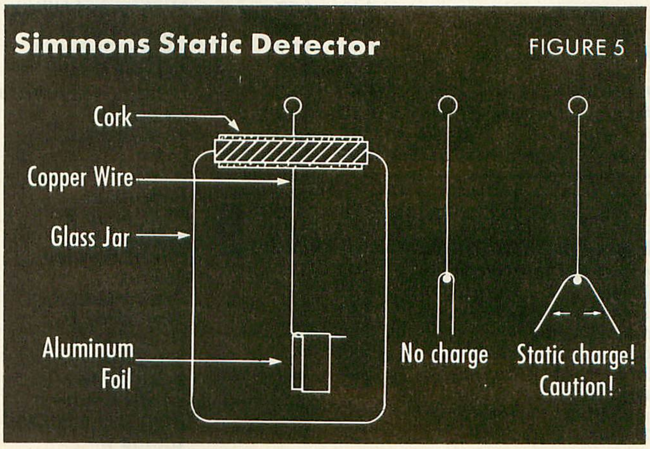
SIMMONS COMPUTER VACUUM

If you clean the insides of your computer with a brush, static electricity could destroy your chips. A vacuum cleaner might suck some chips or other little parts into the vacuum bag. The Simmons Computer Vacuum Cleaner is a safer way:

Buy six feet of plastic tubing (1/8-inch diameter) from a hardware store—it costs about 30 cents. Buy a toy battery motor and a small plastic propeller from a hobby shop. Construct your Simmons Computer Vacuum as shown in *Figure 4*—it'll get the dust, hairs, lint, sand, cigarette ashes and Twinkie crumbs out of your computer in safe low-suction and you can get all the parts for less than a dollar.

STATIC CHARGE DETECTOR

You put your new RAM, POKEY or other chips into your computer. You turn it on. You run the RAM test—no memory. What happened? Static electricity from your hands, tools or clothing probably zapped your chips. They're dead and you'll have to order some more. How could you have prevented this mishap? Why, by spending a few cents and building a couple of Simmons Static Charge Detectors (otherwise known to physicists as a "Leyden Jar"). What you'll need is shown in *Figure 5*.



1. A glass jar
2. A cork that fits the jar
3. A copper wire
4. Aluminum foil

Put a comb, tools, your hand, wool or any other object near the top of the copper wire sticking out of the cork. The aluminum foil will move if there's a static charge, in which case you'd better touch a grounded piece of metal such as a cold water pipe. Only after you pass the Simmons Static Detection Test can you safely touch a chip or the innards of your computer.

You might as well build a few of these gadgets: you can pick up a chip-destroying charge just by walking across the rug on a dry day. Make sure to test yourself *and* your tools *before* you risk picking up another chip.

Tom Simmons is a 48-year-old grandfather who graduated in computer science from Manatee Community College in Bradenton, Florida. He has a master's degree from Kansas State University in communications and is now involved in biomagnetic medical research in Sarasota, Florida. His areas of expertise include CAT scan technology, nuclear magnetic monitoring and and medical sensor construction.

TEVEX = Software, Service, & Savings

SSI

SSI	LIST PRICE	OUR PRICE
Battalion Commander	$40	$27
Battle of Antietam	$50	$33
Battle for Normandy	$40	$27
Battlecruiser *NEW*	$60	$40
Broadsides	$40	$27
Carrier Force	$60	$40
Colonial Conquest	$40	$27
Computer Quarterback	$40	$27
Cosmic Balance	$40	$27
Field of Fire	$40	$27
50 Mission Crush	$40	$27
Gemstone Warrior	$15	$12
Gettysburg	$60	$40
Imperium Galactum	$40	$27
Kampfgruppe	$60	$40
Kamp. Scen. Disk	$20	$15
Knights of the Desert	$40	$27
Mech Brigade	$60	$40
Nam	$40	$27
Operation Market Garden	$50	$33
Panzer Grenadier	$40	$27
Questron	$50	$33
Rails West	$40	$27
Reforger 88	$60	$40
Six Gun Shootout	$40	$27
U.S.A.A.F.	$60	$40
War in Russia	$80	$53
Wargame Constr	$30	$20
Warship *NEW*	$60	$40
Wizard's Crown	$40	$27

BRØDERBUND

BRØDERBUND	LIST PRICE	OUR PRICE
Brimstone (2 drives)	$40	$27
Champ. Lode Runner	$35	$23
Essex (2 drives)	$40	$27
Lode Runner	$35	$23
Lode Runner's Rescue	$30	$20
Mindwheel (2 drives)	$40	$27
Print Shop	$45	$30
Print Shop Companion	$35	$23
PS Grap. Lib. 1,2,3	$25	$17

EPYX

EPYX	LIST PRICE	OUR PRICE
Summer Games	$20	$15
Temple Apshai Trilogy	$20	$15
World Karate Champ.	$30	$20
EPYX Joystick *NEW*	$20	$15

MICROPROSE

MICROPROSE	LIST PRICE	OUR PRICE
Conflict in Vietnam	$40	$27
Crusade in Europe	$40	$27
Decision in the Desert	$40	$27
F-15	$35	$23
Kennedy Approach	$25	$17
Silent Service	$35	$23
Solo Flight	$25	$17
Top Gunner	$25	$17

ATARI ST

ATARI ST	LIST PRICE	OUR PRICE
Alternate Reality *NEW*	$50	$33
Auto Duel *NEW*	$50	$33
Balance of Power *NEW*	$50	$33
Ballyhoo	$40	$27
Black Cauldron	$40	$27
Borrowed Time	$50	$33
Champ. Wrestling *NEW*	$40	$27
Flight Simulator II	$50	$33
Hacker II	$50	$33
Hitchhiker's Guide	$40	$27
Hollywood Hijinx *NEW*	$40	$27
Kings Quest II	$50	$33
Kings Quest III *NEW*	$50	$33
Leader Board	$45	$30
Leather Goddesses	$40	$27
Mean 18	$45	$30
Moonmist	$40	$27
Ogre	$40	$27
Pawn	$45	$30
Phantasie	$40	$27
Phantasie II *NEW*	$40	$27
S.D.I.	$50	$33
Silent Service	$40	$27
Skyfox *NEW*	$45	$30
Space Quest *NEW*	$50	$33
Star Fleet I	$55	$37
Starglider	$45	$30
Sundog	$40	$27
Tass Times	$50	$33
Tenth Frame *NEW*	$40	$27
2 on 2 Basketball *NEW*	$45	$30
Ultima II	$60	$40
Ultima III	$60	$40
Universe II	$70	$46
Winter Games	$40	$27
World Games	$40	$27
Zork Trilogy *NEW*	$70	$47

DKG

DKG	LIST PRICE	OUR PRICE
Clash of Wills	$40	$30
Great War 1914	$40	$30
Metz/Cobra	$40	$30
Objective Kursk	$40	$30
Surrender at Stalingrad	$40	$30

INFOCOM

INFOCOM	LIST PRICE	OUR PRICE
Ballyhoo	$40	$27
Enchanter	$35	$23
Fooblitzky	$40	$27
Hitchhikers Guide	$35	$23
Hollywood Hijinx *NEW*	$35	$23
Leather Goddesses	$35	$23
Moonmist	$35	$23
Sorcerer	$40	$27
Spellbreaker	$45	$30
Wishbringer	$35	$23
Zork Trilogy	$60	$40
Invisiclues	$8	$6

ELEC. ARTS

ELEC. ARTS	LIST PRICE	OUR PRICE
Age of Adventure	$15	$12
Archon	$15	$12
Archon II: Adept	$15	$12
Chessmaster 2000	$40	$27
Chickamauga	$35	$23
Lords of Conquest	$33	$22
Mail Order Monsters	$15	$12
Movie Maker	$15	$12
M.U.L.E.	$15	$12
Ogre *NEW*	$40	$27
One on One	$15	$12
Racing Destr. Set	$15	$12
Rommel *NEW*	$40	$27
Touchdown Football	$15	$12
Ultima I-Origin Sys. *NEW*	$40	$27
Ultima III-Origin Sys.	$50	$33
Ultima IV-Origin Sys.	$60	$40

ETC.

ETC.	LIST PRICE	OUR PRICE
Alternate Reality	$40	$27
Fight Night	$30	$20
Flight Simulator II	$50	$33
Hacker	$25	$17
Hardball	$30	$20
Leader Board	$40	$27
Mindshadow (64k)	$25	$17
Mercenary	$30	$20
Mercenary-2nd City	$20	$15
Micro League Baseball	$40	$27
MLB 1986 Team Disk	$20	$15
Music Studio	$35	$23
Never Ending Story	$30	$20
Spy vs Spy I & II	$15	$12
Star Fleet I	$50	$33
Triple Pack	$20	$15
Universe	$90	$70

Tevex Blank Disks
Box of 10, 5 1/4" DSDD only $12

COMING SOON

FOR THE 8-BIT SERIES	FOR THE ST
Chickamauga - SSI	Bard's Tale - Elec Arts
Dungeon - Datasoft	Breach - Omnitrend
Guderian - Avalon Hill	Colonial Conq. - SSI
Pawn - Firebird	Defender of the Crown
Phantasie - SSI	Gunship - Microprose
221-B Baker Street - Datasoft	Rings of Zilfin - SSI
	Roadwar 2000 - SSI
	Shard of Spring - SSI
	Wizard's Crown - SSI

TEVEX

INCORPORATED
1710 Wilwat Drive, Suite E
Norcross, GA 30093
404-441-3045

BEST SELECTION - We have carefully selected the best titles from the most challenging software available.

CALL TOLL-FREE - Call us to place an order or just to ask a question. Every call is always welcome on our 800 line.

SAME DAY SHIPPING - We ship every order the same day it's placed. Just call before 3:30 pm and we'll ship your order UPS.

DISCOUNT PRICES - Save up to 1/3 off the retail price when you buy from Tevex. Why pay more for the same software?

FRIENDLY, KNOWLEDGEABLE STAFF - We are always available to answer your questions and keep you up to date on new & upcoming games.

CALL TOLL-FREE 1-800-554-1162

SAME DAY SHIPPING *

WRITE FOR FREE CATALOG VISA MASTERCARD **Open 9-8 Mon. - Fri. 10-4 Sat.**

Georgia residents call 404-441-3045. ORDERING AND TERMS: C.O.D. orders welcome. When ordering by phone use VISA or MASTERCARD. When ordering by mail send personal check or money order. Include phone number. SHIPPING: Add $3.00 for shipping and handling charge. Georgia residents add 4% sales tax. Shipping for Canadian orders is $4.00 or 5% of order. APO & FPO orders add $3.00 or 5% of order. Shipping for all other foriegn orders is $10.00 or 15% of order. * On all orders before 3:30 pm. All prices subject to change.

WARSHIP

Strategic Simulations, Inc.
1046 N. Rengstorff Avenue
Mountain View, CA 94043
(415) 964-1353
$59.95, 48K disk
CIRCLE **182** ON READER SERVICE CARD

Reviewed by Rich Moore

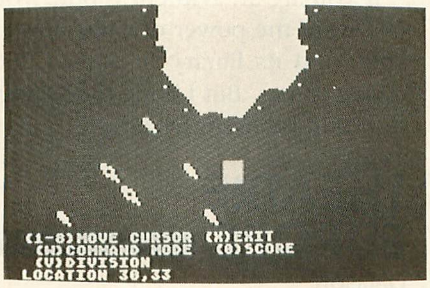
Warship is right on target in simulating surface naval battles in the Pacific during World War II. SSI has packed all the major elements of surface engagements and command under fire into this excellent wargame. While oriented toward the war in the Pacific from 1941-45, an experienced gamer can use the game's utilities to construct a wide range of naval warfare scenarios. At $59.95 it's expensive, but with the discounts widely available, it should be well worth having in your collection. Warship is fun, challenging and as new as you want to make it.

The package comes with four ready-to-play scenarios from World War II, three of them taken from historical battles at sea and one using hypothetical battle-groups. Games can be played by two human players or one human against the computer. You can also let the computer play both sides and just sit back and watch the action. Handicaps can be imposed on either side to provide more challenging games. Two control levels are provided: "Ship" mode, with command over individual units, and "Division Command" for the greater challenge of directing a group of ships.

Warship considers a multitude of factors: land masses, visibility, damage control, ship size, armor, maneuverability, weapon size, accuracy and masking (which SSI calls "facing"). You can use smoke to screen ships, but radar can see right through it as well as extending normal detection ranges and allowing detection of the enemy at night.

Battle damage includes cumulative effects of fire, flooding, damage to the bridge, and losses of electrical power, propulsion, steerage and weapons. Also, a hit may cause magazine detonation, but I never saw this sink the ship in a game.

Neither side has air forces at its command, but the side designated *not* to have "air superiority" suffers a reduction in the points it scores. Given that this game is strictly for surface engagements, it follows that air



power shouldn't be a factor on either side. Fortunately, you can construct your own scenarios and select "Neutral" for relative air power to keep it from confusing the outcomes of your surface battles.

With the provided utilities you can build a game from scratch, but you can't modify an existing scenario (or saved game). You can create charts (SSI uses the land warfare term "maps") of any area of the world that can be represented on a 60×60 grid of 1,000-yard squares. The maps *can* be independently saved and modified later. Land masses are represented effectively (if crudely) and can include terrain low enough to permit visual and radar detections across it.

Fleets can have up to 20 ships each. The forces are drawn from 53 Allied ship classes and 27 Japanese classes, but *all* of their characteristics and weapons can be modified. Warship is actually flexible enough to set up almost any surface battle from the last 600 years or so, though some consideration has to be given to the fact that the game has a built-in gunfire-accuracy disadvantage for the "Japanese" fleet.

It's a shame that Warship's display doesn't really take advantage of the Atari's graphics capabilities. Other SSI simulations offer high-resolution, multi-colored graphics and smooth scrolling, which really give the player more and better information. In spite of its weak graphics, Warship plays so well that it can still be highly recommended.

The manual is complete, and SSI even tells you how the computer evaluates the interactions between the forces. But once you've engaged and the battle has become a melee (and they *always* do), you better have a sound, relatively simple battle plan instead of scrambling to "optimize" your shots.

***Antic** wargame fans will be interested in this excerpt from Lieutenant Commander Moore's letter accompanying the review. "Warship came along at a good time. My primary project now is to get a naval warfare simulation for use in wargames here in Korea. And unfortunately the system I used in Newport at the Naval War College is far too large and complex. So I've got to check out some smaller packages and get appropriate software off the shelf."*
—ANTIC ED

CHESSMASTER 2000

Software Toolworks
13557 Ventura Blvd.
Sherman Oaks, CA 91423
(Distributed by Electronic Arts)
(818) 907-6789
$39.95, 48K disk
CIRCLE **210** ON READER SERVICE CARD

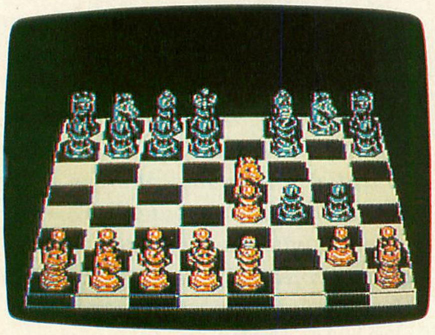
Reviewed by Charles Cherry

While I'm not an advanced enough chess player to test the abilities of **Chessmaster 2000** exhaustively, I can report that it beat my copies of

continued on next page

Colossus Chess 3.0 and Odesta Chess 7.0 in single games. A single game does not necessarily prove superiority, but at least it proves that Chessmaster 2000 is in the same league as the established software. By thinking all the time, even while you are making your moves, Chessmaster 2000 speeds up its play and is a quick and formidable opponent.

For me, however, the deciding factor about a chess program is playability, not its ultimate power—they can all beat me at the highest levels. And Chessmaster 2000 is only average in playability. Despite the beautiful photographs on the package, the 3-D



display is unusable even on a very good monitor—you can't tell overlapping pieces apart. (*The 3-D in Datamost's Mychess II, reviewed in the October 1985 issue, also got poor notices although the overall game was rated good.*—ANTIC ED) Chessmaster 2000's standard 2-D is acceptable, although the pawn and bishop are a little hard to tell apart.

Of the features listed on the back of the package, the chess clock and the captured pieces functions are not available on the Atari 8-bit (read the small print). The ommission of the chess-clock is serious. If you want to play tournament-style, you have to provide your own timer and slap it for both yourself and the computer. But on the plus side of the features list inaccuracies, there are 20 levels of play instead of 12.

Chessmaster 2000 has a very nice booklet about the history of chess, but a poor instruction sheet. Part of the problem with the instructions is the poor organization of the chess program itself. Control keys make no mnemonic sense, menu names are not very descriptive, and submenus are not always logical. The joystick can be used for moving pieces, but not for menu selection. The joystick is a little tricky to use with this software and won't move diagonally, I abandoned it early on. Atari owners have come to expect much more.

If you are an avid chess buff, you will want the power of Chessmaster 2000 and its library of almost 100 classic games. But I hope the ST version will be more friendly.

THEATRE EUROPE

Datasoft
19808 Nordhoff Place
Chatsworth, CA 91311
(818) 886-5922
$34.95, 48K disk
CIRCLE 151 ON READER SERVICE CARD

Reviewed by Dr. John Stanoch

Theatre Europe is Datasoft's first computer wargame. In this solitaire game the player can command either the NATO or Warsaw Pact forces in an imaginary war. Each turn represents one full day and the game can last 30 days before determining a victor. However, the rules don't explain how this is done, so the player doesn't know whether to concentrate on territory or to maximize enemy losses while limiting his own. The computer also gives the player a command ability rating based upon a percentage score for his performance. This isn't explained either.

The single, nonscrolling screen map is bordered by the French Atlantic coast, northern Italy, the Soviet frontier and the southern half of the Norway peninsula. The map has sea, mountain, clear and capital city terrain types. Each unit is shown as a solid white disk for the Pact, blue for NATO and purple for the neutral forces. A Pact unit represents one army, while the NATO units are corps.

Each unit has three ratings: ARM represents the overall effectiveness and combat strength of the unit; AIR shows the relative aerial ground support strength; and SUP shows the amount of ammunition, food, water and fuel. As units attack and take losses in combat, their ratings are decreased.

The first phase of each six-phase turn is the movement phase, in which you access a unit by placing the cursor over it and pressing the joystick trigger. After the cursor turns green, you can place the unit in an adjacent empty space. When a unit is programmed to move, a dot appears in the center of its disk. Pressing the space bar executes all movement commands. The second phase is combat, where attack commands are issued as above. This is followed by the battle phase, where the player can either sit back and watch all involved units flicker briefly, or have an arcade-style battle involving enemy helicopters, jets, tanks and guns.

NATO players must phone California to authorize nuclear attacks

Next is the rebuilding phase, where the player allocates ARM, AIR and SUP points to his units. Then comes the air phase, for allocating air points—among which are air superiority, interdiction and reconnaissance—to seven air missions.

Lastly, and most ominously, is the special mission phase, where the player can launch a strategic chemical or nuclear attack. As the NATO side, you must obtain an authorization

code in order to launch a nuclear strike—you must actually call a California phone number. When a nuclear attack is launched by either side, the screen shows a city under a missile attack, then shows it in ruins with a mushroom cloud rising from the ashes.

Although the concept of this game is sound, the execution is uneven. First, the arcade battle phase bears no similarity to its description in the manual and quickly becomes a nuisance. Next, the game is not play-balanced. The NATO forces in this game cannot possibly prevent the total overrun of West Germany by the Pact forces. In playing the game for over three days, I was never able to win as the NATO player, regardless of which strategy I used.

Disappointingly, these flaws don't occur in the Commodore 64 version. Datasoft should have spent more time polishing and testing the Atari conversion.

SYSTEM-80

Small Systems Innovation
600 West 21 Avenue
Apache Junction, AZ 85220
(602) 983-2686
$19.95, 64K disk
CIRCLE **181** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

In the midst of cries for 80-column word processing on the Atari 8-bit computer, Small Systems Innovation has developed **System-80**, whose display is crisp and readable.

System-80's other main feature is a date and time display (set upon booting), but otherwise the package contains nothing that other 8-bit word processors don't. In fact, it doesn't have most features that other 8-bit word processors *do*—including cut-and-paste, text buffers, search-and-replace, italics, boldface, underlining, or different print sizes. Documentation is six pages long.

While System-80's display and limited features might make it appropriate for letters or other short documents, currently the program cannot be considered as a serious word processor. However, Small Systems Innovation has assured **Antic** that work is already underway on a new version of System-80 that will include many standard word processing features—and thorough documentation.

MINIATURE GOLF PLUS

XLEnt Software
P.O. Box 5228
Springfield, VA 22150
(703) 644-8881
$29.95, 48K disk
CIRCLE **250** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

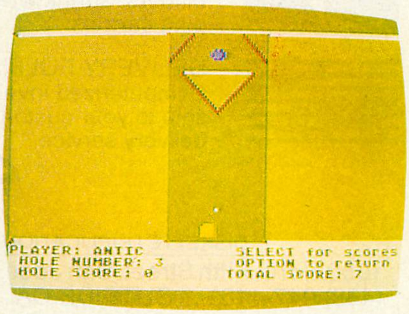
Miniature Golf Plus is a kick. It's fun to play although—or partially because—the game does not entirely pay homage to physical laws. Inertia and momentum are taken into account, but sometimes it takes quite a while for the ball to lose speed after striking an obstacle. Rebound angles appear to be correct, however, which is a great aid in planning a shot.

The feature that makes this game so amusing is a construction set for designing your own miniature golf holes, as many as 60 on a disk. Twelve pages of documentation is enough to send you on your way.

Obstacles include isosceles triangles (with apex facing up, down, left or right), rectangles or diagonal lines of any size within the screen boundaries, and "barriers"—small rectangles that move across the screen. These would more or less correspond with pendulums, paddlewheels and other mobile hazards found on a real miniature golf course. You set the minimum and maximum x-coordinates and the speed.

You can set up a hole to offer a formidable challenge. You can back yourself into a corner with a bad shot easily, especially if you mistime a barrier's movement. You can also edit a hole that proves too easy or too difficult.

After you boot the program, the screen presents these choices: Play Miniature Golf, Construction Set and Initialize a Disk. The third selection is necessary for creating a course disk, as the program not only formats it but places an initialization routine on the disk.



If you choose to play the game, you'll be asked to insert a data (course) disk and enter the players' names. The joystick-controlled putter is represented by a small block, with a notched corner that hits the ball. The joystick is used to guide the club to the desired position on the field. When you press the fire button, the club strikes the ball.

Ball movement is slow, but this lets you closely observe the angles of impact with obstacles and hazards and makes it easier to plan a shot. Running scores are kept for each player, but no par is set for the holes. After you play the last hole, the screen shows the scores.

Miniature Golf Plus is a nice way to relax. It doesn't take long to play, and it's easy to set up your own course. Since the ball doesn't behave exactly as it would on a real miniature golf course, it might be best not to be in a "miniature golf" mindset, but rather to treat the game as its own entity—a game in itself, not just a simulation of another game.

Software Discounters of America

S.D. of A.

For Orders Only—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291

- Free shipping on orders over $100 in continental USA
- No surcharge for VISA/MasterCard
- Your card is not charged until we ship

ABACUS BOOKS
ST Gem Prog. Ref.
ST Graphics & Sound CALL
ST Internals FOR
ST Machine LOW
Language PRICES
ST Midi Programming
ST Peeks & Pokes
ST 3-D Graphics
ST Tricks & Tips

ABACUS SOFTWARE
Assem/Pro ST $39
Data Trieve ST $33
Forth/MT ST $33
Paint Pro ST $33
Text Pro ST $33

ACADEMY
Typing Tutor ST $23

ACCESS
Leader Board Golf (D) .. $25
Leader Board Golf ST .. $25
L.B. Tourn. Disk #1 ST .. $14
L.B. Tourn. Disk #1 (D) .. $14
Tenth Frame ST $25
Triple Pack: BH1, BH2, Raid Over Moscow (D) $14

ACCOLADE
Fight Night (D) $19
Hardball (D) $19
Hardball ST $29
Mean 18 Golf ST $25
Mean 18 Famous Course Disk ST $14

ACTIVISION
Great American Cross Country Road Race (D) $16
Hacker (D) $16
Hacker 2 ST $33
Music Studio ST $39
Music Studio (D) $23
Paintworks ST $44
Portal ST $33
Shanghai ST $29
Tass Times in Tonetown ST $33

AMERICAN EDUCATIONAL COMPUTER
Biology (D) $14
French (D) $14
Grammar (D) $14
Science: Grades 3/4 (D) .. $14
Science: Grades 5/6 (D) .. $14
Science: Grades 7/8 (D) .. $14
Spanish (D) $14

ARTWORX
Bridge 4.0 (D) $16
Bridge 4.0 ST $19
Bridge 5.0 ST $23
Hole In One Golf ST $14
Mail List ST $14
Strip Poker (D) $21
Strip Poker ST $25
Female Data Disk 1 .... $14
Male Data Disk 2 .... $14
Female Data Disk 3 .... $14

AVANTAGE
Spy vs. Spy 1 & 2 (D) .. $9.88

BATTERIES INCLUDED
Degas ST $23
Degas Elite ST $49
Isgur Portfolio System ST $129
Paperclip (D) $36
Paperclip w/Spell 130XE $36
Thunder ST $25

BRODERBUND
Champ. Loderunner (D) . $19
Karateka (D) $19
Loderunner (D) $23
Print Shop (D) $26
Print Shop Graphics Library #1, #2, #3 (D) $16 Ea.
P.S. Companion 64K (D) . $23

CENTRAL POINT
Copy 2 ST $25

CDA
America Cooks Series:
American ST $9.88
Chinese ST $9.88
French ST $9.88
Italian ST $9.88
Mexican ST $9.88

DATASOFT
Alternate Reality: The City ST $23
Mercenary ST $23

DAVIDSON
Math Blaster (D) $33
Spell It (D) $33
Word Attack (D) $33

Skyfox ST $29
Star Fleet I (D) $33
Star Fleet 1 ST $33

EPYX
Ballblazer (D) $9.88
Champ. Wrestling ST $25
Dragonriders Pern (D) . $9.88
Koronis Rift (D) $9.88
Rescue on Fractalus (D) $9.88
Rogue ST $23
Sub Battle Simulator ST . $25
Super Cycle ST $23
Temple Apshai Trilogy (D) $14
Temple Apshai Trilogy ST $14
The Eidolon (D) $9.88
Winter Games ST $23
World Champ. Karate ST . $25
World Games ST $25

FIREBIRD
Golden Path ST $29
Guild of Thieves ST .. $29
The Pawn (D) $25
The Pawn ST $29

Leather Goddesses (D) . $23
Trinity ST $25
Wishbringer (D) $23
Zork 1 (D) $23
Zork Trilogy (D) $39
* All titles in stock for 520 ST—Call for prices

MASTERTRONIC
Action Biker (D) $6.88
Elektraglide (D) $6.88
Magnum Joystick $12
Ninja (D) $6.88
Ninja ST $14
Renegade ST $14
Speed King (D) $6.88
The Last V8 (D) $6.88
Vegas Poker & Jackpot (D) $6.88

MICHTRON
BBS 2.0 ST $49
Calendar ST $19
Corner Man ST $33
GFA Basic Int. ST $49

MINDSCAPE
Balance of Power ST ... $33
Bop & Wrestle (D) $19
Brattacus ST $29
Crossword Magic (D) ... $33
High Roller ST $33
Infiltrator (D) $19
Trail Blazer (D) $19

MINDSCAPE CINEMAWARE
Defender of the Crown ST .... Call
S.D.I. ST $33
Sinbad: Throne of the Falcon ST .... Call
The King of Chicago ST .. Call

ORIGIN
Autoduel (D) $33
Autoduel ST $33
Ogre (D) $26
Ogre ST $26
Ultima 3 ST $39
Ultima 3 (D) $32
Ultima 4 (D) $39

SOFTLOGIC
Publishing Partner ST .. $95

SOLID GOLD
Pitfall/Demon Attack (D) $9.88

SPECTRUM HOLOBYTE
Gato ST $23

SPRINGBOARD
Certificate Maker ST ... $33

SSI
Gettysburg (D) $37
Phantasie (D) $25
Phantasie ST $25
Phantasie 2 ST $25
Phantasie 3 ST .... Call
Rings of Zilfin ST .... Call
Roadwar 2000 ST .... Call
War Game Const. Set (D) $19
Wizard's Crown (D) $25
Wizard's Crown ST .... Call

SUBLOGIC
Flight Simulator 2 (D) ... $32
Flight Simulator 2 ST ... $33
F.S. Scenery Disks .... Call
Jet ST .... Call

SYNAPSE
Syn-Calc (D) $33
Syn-File (D) $33

TDI
Modula 2 ST $49
Modula 2 (Dev.) ST $95

TIMEWORKS
Data Manager ST $49
Swiftcalc ST $49
Word Writer ST $49

TRONIX
S.A.M. (D) $19

UNICORN
Animal Kingdom ST $25
Decimal Dungeon ST $25
Fraction Action ST $25
Kinderama ST $25
Math Wizard ST $25
Read & Rhyme ST $25

UNISON WORLD
Art Gallery 1 ST $19
Art Gallery 2 ST $19
Print Master ST $25

VALUE TIME
Calendars & Stationery ST $9.88
Greeting Cards ST $9.88
Signs & Banners ST $9.88
Art Library 1 or 2 ST . $9.88 Ea.

VIP TECHNOLOGIES
VIP Professional ST ... $149

XLENT
First Xlent W.P. (D) $19
Page Designer (D) $19
P.S. Interface (D) $19
Rubber Stamp (D) $19
Rubber Stamp ST $25
Typesetter (D) $23
Typesetter Elite ST $33
Write 90° ST $19

ACCESSORIES
Anchor VM 520 300/1200 Baud Modem ST $129
Bonus 5¼ SS, DD . $5.99 Bx
Bonus 5¼ DS, DD . $6.99 Bx
Compuserve Starter Kit . $23
Disk Case (40-3½) $9
Disk Case (75-5¼) $9
Disk Drive Cleaner-3½ .. $9
Epyx 500XJ Joystick ... $14
Wico Boss $12
Wico Bat Handle $17

MONTHLY MADNESS SALE



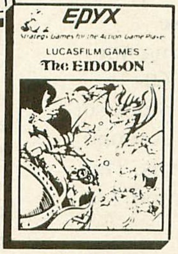
Great Fantasy Role-Playing—You're a Techno-Scavenger Salvaging Hi-Tech Weapons from the Ancients!



Realistic, Three-Dimensional Depth Perception

Your Choice

9.88 Each



Great Fantasy Adventure—The Eidolon™ Transports You Into a Magical Realm



Realistic, Three-Dimensional Landscape

Special Bonus: Buy any 3, get the 4th *FREE*

Available for: Atari XL/XE (disk)

ELECTRONIC ARTS
Software Classic Series:
Age of Adventure (D) .. $9.88
Archon (D) $9.88
Archon 2: Adept (D) ... $9.88
Financial Cookbook (D) . $9.88
Mail Order Monsters (D) . $9.88
Movie Maker (D) $9.88
M.U.L.E. (D) $9.88
Music Const. Set (D) .. $9.88
One-on-One (D) $9.88
Pinball Const. Set (D) . $9.88
Racing Dest. Set (D) .. $9.88
Seven Cities of Gold (D) . $9.88
Super Boulder Dash (D) . $9.88
Touchdown Football (D) $9.88

ELECTRONIC ARTS
Arcticfox ST $29
Chessmaster 2000 (D) .. $26
Chessmaster 2000 ST .. $29
Financial Cookbook ST . $33
Lords of Conquest (D) .. $23
New Tech Coloring Book ST $14
Rommel Battles for Tobruk (D) $26

Star Glider ST $29

FIRST BYTE
First Shapes ST $33
Kid Talk ST $33
Math Talk ST $33
Speller Bee ST $33
*These programs talk!

FTL
Dungeonmaster ST $25
R.P.V. ST $25
Sundog ST $25

GAMESTAR
Champ. Baseball ST $29
Champ. Basketball ST .. $29
Champ. Football ST $29

HI-TECH EXPRESSIONS
Award Ware (D) $9.88
Card Ware (D) $6.88
Heart Ware (D) $6.88
Party Ware (D) $9.88

INFOCOM
Ballyhoo (D) $23
Bureaucracy (D) $23
Hitchhiker's Guide (D) .. $23
Hollywood Hijinx (D) ... $23

GFA Basic Compiler ST . $49
Karate Kid II ST $25
Major Motion ST $25
Match Point ST $25
M-Disk Plus ST $25
Mighty Mail ST $33
Personal Money Mgr. ST . $33
Pinball Factory ST $25
Space Shuttle II ST $25
Time Bandit ST $25
Trim Base ST $59

MICROLEAGUE
Baseball (D) $25
Box Score Stats (D) $16
General Manager (D) $25
1985 Team Data Disk (D) $14
1986 Team Data Disk .. $14
WWF Wrestling ST .... Call

MICROPROSE
F15 Strike Eagle (D) $23
Kennedy Approach (D) .. $16
Silent Service (D) $23
Silent Service ST $25
Top Gunner (D) $16

MILES COMPUTING
Harrier Strike Mission ST . $33

OSS
Action (R) $47
Action Tool Kit (D) $19
Basic XE (R) $47
Basic XL (R) $37
Basic XL Tool Kit (D) $19
Personal Pascal ST $49

PCA
Graphic Artist ST $129
Font Editor ST $49

PROGRESSIVE
Logistix Jr. ST $59
Logistix 1040 ST $95
Superbase ST $95

SHELBOURNE
Pool ST $19
Shuffleboard ST $19

SIERRA
Black Cauldron ST $25
Donald Duck's Playground ST $16
Kings Quest 1, 2, or 3 ST ...... $33 Ea.
Space Quest ST $33
Winnie the Pooh ST $16

P.O. BOX 111327—DEPT. AT—BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in stock items. Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! *Shipping: Continental U.S.A.*—Orders under $100 add $3; *free shipping on orders over $100. AK, HI, FPO, APO—add $5 on all orders. Canada & Puerto Rico—add $10 on all orders.* Sorry, no other International orders accepted! *PA residents add 6% sales tax on the total amount of order including shipping charges! REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291* (1) Status of order or back order (2) If any merchandise purchased within 60 days from S.D. of A. is defective, please call for a return authorization number. Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 15% restocking charge. After 60 days please refer to the manufacturers warranty included with the merchandise & return directly to the manufacturer. *Customer service will not accept collect calls or calls on S.D. OF A.'s 800# order lines!* Have you seen our on line catalog of 1000 software titles for Commodore, Atari, Apple, IBM and Amiga? It's on Compuserve's Electronic Mall—just type GO SDA and shopping for software will never be the same again! *HOURS: Mon.-Fri. 9AM-5:30 PM, Sat. 10AM-4PM Eastern Time. Because this ad had to be written 2-3 mos. before it was published, prices & availability are subject to change!*

New Products notices are compiled by the ***Antic*** *staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.*

ONE-MINUTE LETTER

(word processor)
Thomas Sulcer
351 West 57 Street, #1745
New York, NY 10019
(212) 489-9161
$19.95, 48K disk, DOS 3.0
CIRCLE **200** ON READER SERVICE CARD

A sentence processor more than a word processor, **One-Minute Letter** takes the tedium and inflexibility out of form letters. Use this powerful keystroke macro sytem to set up targeted sales letters, resume cover letters, replies to different inquiries—or just a note to Auntie Rita and the other relatives.

ICX-85 KEYPAD, RAMDRIVES

(hardware modifications)
Innovative Concepts
31172 Shawn Drive
Warren, MI 48093
(313) 293-0730
CIRCLE **197** ON READER SERVICE CARD

IC replaces the Atari CX-85 numeric keypad circuit board and a connector—all you need to do is solder 12 wires—and your new **ICX-85 Keypad** ($39.95) can be expected to work with *all* the productivity software now available for 8-bit Ataris.

Owners of 600XLs can upgrade their machines to 64K with the **RAMdrive +64K** ($24.95) and run all 800XL software. The **RAMdrive +XL** ($59.95) is a 256K upgrade for your 800XL that includes two disks containing RAMdisk handlers, source codes, sector copiers and other utilities that use the excess memory. Or upgrade your 130XE to 320K with the **RAMdrive +XE** ($44.95). It has all the features of the RAMdrive+XL, but with 64K more RAM.

BIG PICTURE

(printing software)
MTS SOFTWARE
P.O. Box 623
Williamsville, NY 14221
(716) 634-0578
Requires Artist Unleashed
$39.95, 48K disk
CIRCLE **137** ON READER SERVICE CARD

This utility program for the Artist Unleashed drawing program gives you the unbelievable dot-matrix resolution of 960×720 pixels, for a printed page three screens wide and four and a half screens high.

MICROMOD TURBOBASE

(productivity software)
MicroMiser Software
1635-A Holden Avenue
Orlando, FL 32809
(305) 857-6014
$159.95, 48K disk
CIRCLE **199** ON READER SERVICE CARD

Suitable for almost all database purposes, **MicroMod Turbobase** eliminates disk-switching during normal operation and features a 60-column spreadsheet, a word processor and the ability to set up any accounting, payroll and invoice systems. This new program replaces MicroMod 3.0.

COLLEEN MUSIC CREATOR

(music software)
Colleen Limited
18 Bishop Street
Penygraig, Mid-Glamorgan
Wales CF40 1PQ
(0443) 434846/435709
CIRCLE **202** ON READER SERVICE CARD

Create your own music masterpiece with the **Colleen Music Creator**, featuring Colleen Fun-Play, which provides realtime rhythm accompaniment in boogié, country, disco and waltz styles. The Drum Machine lets you create infinite drum patterns—from bass drum to high hat. The Creator lets you push your Atari's sound chip to the limit, compressing your music into an editable, compact machine language file. All tunes created with the Creator can be combined into multiple music files. A sound effects library is provided too.

PERCOM RFD ROM

(hardware modification)
Computer Service Land, Inc.
14506-B Lee Road
Chantilly, VA 22021
(703) 631-4950
$50
CIRCLE **198** ON READER SERVICE CARD

The Percom disk drive RFD ROM source code has been assembled and upgraded. Now there won't be any more timeouts, I/O errors or disk crashes with AtariWriter and other programs. When it formats, the renovated Percom disk drive writes zeros instead of 1A's to all sectors, and automatic density switch is allowed for drives 2, 3 and 4 when used with operating systems like TopDOS, MyDOS and SpartaDOS. The ROM chip is $20 and the source code listing is $30.

NATIONAL E-MAIL REGISTRY

(online service)
Three Neshaminy Interplex
Trevose, PA 19047
(800) 622-0505
300/1200/2400 baud modem
CIRCLE **201** ON READER SERVICE CARD

If you have several different online accounts, you might spend hours every day just getting your electronic mail. But now you can list your *preferred* email address in the **National E-Mail Registry**—whether it's your CompuServe PPN, MCI Mail identification or even BBS handle. All registrants are included in the **National E-Mail White Pages**, a searchable online directory (call (203) 245-7720). Each new registrant gets 50 free searches. Thereafter, unlimited searching costs $95 a year for frequent users, and occasional users can buy 50 searches for $10.

Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future.
—ANTIC ED

Logo Mailing List

Powerful mail-merge utility

BY ALLAN MOOSE AND MARIAN LORENZ

Here's a useful, convenient mailing-list application for the Logo programming language. Logo Mailing List works on all 8-bit Atari computers of any memory size. It requires a disk drive, a printer and the Atari Logo language.

We find it easier to write a data management program such as a mailing list in Logo than in BASIC.

So much has been written about the turtle geometry features of the Logo programming language that we sometimes wonder if everyone has forgotten about Logo's LISP (LISt Processing) heritage. LISP, the keystone language of artificial intelligence programming, shares a number of features with its descendant that make Logo an ideal language for writing programs to manipulate data in the form of words and lists.

The two types of objects in Logo are words and lists. Logo provides several primitives to construct lists, such as FPUT and LPUT—and to take apart lists, such as FIRST, LAST, BUTFIRST and BUTLAST. The primitives EMPTYP and EQUALP are useful for controlling lists.

FIRST is used to obtain the first object in a list or word. LAST gets the last object in a list. BUTFIRST (BF) allows access to the internal objects in a list, returning all but the first object. To get at the inside parts of a list, BFs can be piled up, one after another, to strip several objects from the list. BUTLAST (BL) works the same as BUTFIRST, except from the other end of the list.

FPUT, for "first put," takes two inputs. The first is an object (word or list), and the second is a list. For example:

MAKE "NAME "TERRAPIN,

MAKE "PHRASE [THE BIG GREEN TURTLE]

MAKE "NEW FPUT :TERRAPIN :PHRASE

PR :NEW

prints the list called "NEW:

TERRAPIN, THE BIG GREEN TURTLE

LOGO MAILER

Carefully type in Listing 1, MAIL.LGO. (TYPO II does not work with Logo.) SAVE a copy to disk. To start the program, type ADDRESS. Antic Disk owners should copy the 8-bit program, MAIL.LGO, to another disk before using it.

We begin building the mailing list program by deciding what we want to do. The choices are:

Create a new mailing list

Add to a mailing list

Update an entry

Print out entire mailing list

Print out a selected name

Outlining the tasks helps identify the types of procedures we will need. Creating a mailing list means we must take a series of inputs, each consisting of a name, street address and city/state/ZIP code, which are saved as a datafile. Consequently, we'll need procedures which accept inputs and save the file constructed from the inputs.

To add to an existing file, we need one procedure to read in a datafile and another to tack new inputs onto the end of that file. Updating an entry implies the need for a procedure that can search for a given entry, as does the desire to print out a selected name.

Identifying the procedures still leaves unanswered the important question: how shall we organize the datafile? The answer is determined by the presence of Logo primitives that manipulate lists. The clear choice is to make the entire datafile a list that's built up from sublists. Each record in the datafile will consist of three lists: one holding the first and last name, one with the street address and one

continued on next page

with the city, state and ZIP code.

PROGRAM TAKE-APART

Since Logo is a procedural language, it readily lends itself to the technique of breaking a large programming task into smaller pieces. We can impose additional structure into a Logo program by placing procedures into functional groups. We set up the following groups.

The Setup Group:
TO ADDRESS
TO MENU
TO CHOOSE
TO QUIT

The Utility Group:
TO INPUT
TO ADD
TO GETMAIL
TO UPDATE
TO CORRECT
TO DATASAVE
TO CREATELIST
TO FIND
TO PRESS.C

The Printout Group:
TO SELECT
TO SELECTPRINT
TO PRINT.SOME
TO PRINT.ALL

ADDRESS begins the program by loading the procedures. Pressing the C key produces a menu of options. The procedure CHOOSE, which is called by MENU, reads the keyboard, examines the response, choosing a correct sequence of procedures, and handles an incorrect input by displaying an error message followed by a return to the menu.

PROGRAM CONTROL

Program control flows in Logo when one procedure calls another procedure which calls a third, which calls a fourth and so on. When the last procedure in the chain is finished, control reverts to the previous procedure until it is finished, and then to the one before it and so on—until control reverts to the first procedure in the sequence.

Thus when the user selects item 2 on the menu, CHOOSE first sets up an empty list called "data," and then calls the procedure INPUT. Each pass through INPUT builds up a record composed of the sublists NAMELIST, STLIST and CITYLIST, which are recorded as the user's response to a prompt on the screen. After the user has a chance to make corrections, the lists are added to the data list by these three lines:

MAKE "DATA LPUT :NAMELIST :DATA
MAKE "DATA LPUT :STLIST :DATA
MAKE "DATA LPUT :CITYLIST :DATA

Then the procedure INPUT calls itself, thus looping around for additional inputs. The list "data" is built up as a sequence of records:

[[NAME][STREET ADDR][CITY STATE ZIP]]
[[NAME][STREET ADDR][CITY STATE ZIP]]

INPUT stops when the user enters END after the "enter name" prompt. Typing END sends the program to the procedure DATASAVE, which first puts an asterisk (*) at the end of the data list to serve as an end-of-file marker. DATASAVE then opens the disk with a file called MAILIST and prints the List DATA.

UPDATING LISTS

After a mailing list is created, it is occasionally necessary to update a record. Or, more often, one will want to print out a single record onto a mailing label. The list-handling primitives in Logo make it easy to write procedures that locate a specific record and then carry out subsequent actions. Of the two jobs, updating a mailing list is the more complex.

Updating a record begins with the line in CHOOSE that reads:

IF :CHOICE = "3 [CT UPDATE MENU]

This line clears the screen, calls the procedure UPDATE and tells the computer to go back to the menu when the updating sequence is completed.

UPDATE begins by calling GETMAIL, a utility procedure which opens the disk and reads in the data list assigning it a label, "DATA. After GETMAIL executes, control reverts to UPDATE. The next line:

MAKE "NEWDATA BL :DATA

removes the EOF marker and renames the data list, freeing the label "DATA for later procedures. Finally, UPDATE asks for the first and last names of the record to be changed and calls FIND, the searching procedure, which locates the record with the name-matching TAG and starts building up the corrected datafile.

MATCHING

If the first name in the datafile does not match the TAG, then the three lines beginning MAKE "DATA LPUT will assign this record to the list "DATA. That record is then stripped from "NEWDATA by three BLs. Then FIND tests to see if "NEWDATA is empty, in which case the whole file has been searched and the name given was not found, and an error message "No matching name located," is displayed. After a short wait, control goes back to the menu via CHOOSE. If the EMPTY condition is not met, FIND is called again, cycling through the data file, stripping records from "NEWDATA and putting them onto "DATA.

Once the proper record is found, FIND calls CORRECT, a procedure that prints the original entry and asks for new inputs. Once these have been given, this record is put in place of the old one in the file "NEWDATA. Now we have two data lists: DATA, consisting of all records up to the revised one, and NEWDATA, holding the updated record and all that follows.

The task of CREATELIST to merge these into the single file called "DATA. CREATELIST's operates similarly to the searching procedure in FIND. Once the "NEWDATA list has been completely merged into DATA, the updated file is saved with DATASAVE. Control is then transferred back to menu through the sequence of procedures starting with CHOOSE.

The procedures that carry out the printing tasks are self-explanatory. They manipulate lists in the same way as the UPDATE and CREATELIST procedures.

Marian Lorenz and Allan Moose are Long Island educators. They wrote Math Art, *a sine wave image-making program in* ***Antic****, June 1986.*

Listing on page 92

SALE • Famous National Brand • SAVE

NLQ 180

Hi-Speed Printer Sale

•160 - 180 CPS • Near Letter Quality • Lifetime Warranty*

Price Break Thru

Sale $199.00

Below Wholesale Cost Prices!

List $499.95

60% OFF LIST PRICE

10" Carriage



NEW All New up Front Panel Controls

Fantastic Graphics

Easy to Use

Fantastic Price

Sale

NLQ-180 Premium Quality Printer

Near Letter Quality Selectable From Front Panel Controls • High Speed Dot Matrix• Letter Quality Modes • 8K Buffer frees up computer 4-times faster • Pica, Elite, Italics, Condensed • Super Graphics • Business or Personal • Tractor/Friction • 15 Day Free Trial • Lifetime Warranty on Print Head* • 6 Month Immediate Replacement Policy •

NLQ-180 Print Samples

```
This is an example of ITALICS
Enhanced        Boldface
Condensed Text    Double-strike
example of Near Letter Quality
```

—— APPLE — ATARI — EPSON —— NLQ180 SPECIFICATIONS —— IBM — COMMODORE — ETC. ——

Print Buffer
8K bytes utility buffer

Printing Direction
Text Mode — Bi-directional
Graphic Mode — Uni-directional

Interface
Centronics Parallel Port

Paper
Plain paper, Roll paper, Single sheet
Fanfold, Multipart paper: max. 3 sheets (original plus 2 copies)

Character Fonts
Pica, Elite, Italics, Condensed

Printing Method
Impact dot matrix

Printing Speed
160-180 CPS at standard character printing

Printing Characters
Standard 9 x 9 dot matrix
NLQ 12 x 18 dot matrix (33cps)
Character size: 2.12 x 2.8 mm (standard)
Character sets: Full ASCII character set (96)
32 International characters

Ink Ribbon Cartridge
Ribbon Life: 3 million characters/cartridge

Physical Dimensions
Size: 15" x 12" x 5"
Weight: 12.7 lbs.

Maximum Number of Characters

Standard:	10 cpi	80 cpl
Standard enlarged:	5 cpi	40 cpl
Elite:	12 cpi	96 cpl
Elite enlarged:	6 cpi	48 cpl
Condensed:	17 cpi	132 cpl
Condensed enlarged:	8.5 cpi	66 cpl
Condensed elite:	20 cpi	160 cpl

INTERFACES

Atari $39.95 Apple II $44.95 Commodore $29.95 IBM $24.95 Laser 128 $19.95 Macintosh $49.95

Shipping, Handling & Insurance Charges
Add $10.00 for shipping, handling, and insurance. Illinois residents please add 6½% sales tax. Add $20.00 for ALASKA, CANADA, HAWAII, PUERTO RICO & APO-FPO orders. All orders must be in U.S. Dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA & PUERTO RICO. Enclose cashier check, money order or personal check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice.
VISA — MASTER CARD — C.O.D. Call For C.O.D. Charges.

COMPUTER DIRECT
22292 N. Pepper Rd., Barrington, Illinois 60010
Call (312) 382-5050 or 382-5244 to Order *We Love Our Customers*

CIRCLE 034 ON READER SERVICE CARD

COMPUTER SYSTEM SALE

Low As **$599.00**

COMPUTER DIRECT

22292 N. Pepper Road, Barrington, Ill. 60010

" The Computer Experts "

Call (312) 382-5050 or 382-5244 for

Free Catalogs of Over 1000 Programs & Accesories

Best Service • Best Price • 1000 Programs • 500 Accessories • 15 Day Free Trial

BEST GUARANTEE

FREE CATALOGS

10 MHz Super Turbo IBM® XT Compatible Computer System

Twice the speed* at just a fraction of the cost!

* Computes over two times faster than the IBM® XT



Run 1000's of IBM® software programs available.

Look at all you get for only $599.00

15 Day Free Trial

90 Day Replacement Policy

Double 90 Day Policy On Computer

The complete system	List Price	Sale Price
10 MHz Super Turbo XT Computer	$1295.00	$499.00
* 512K Memory	$99.95	No extra cost
* Single floppy disk drive	$129.95	No extra cost
* Parallel printer port	$59.95	No extra cost
* Serial printer port	$59.95	No extra cost
* Mouse/joystick port	$59.95	No extra cost
* RGB color graphics port	$99.95	No extra cost
* Hercules compatible monochrome port	$79.95	No extra cost
MS DOS 3.2 & GW Basic	$199.00	$99.00
12'' Hi-Res 35 MHz Green Screen Monitor (TTL & EGA compatible)	$249.00	$99.00
Monitor interface cable	$24.95	$19.95
Big Blue Printer	$199.00	$39.95
RS 232 IBM to Big Blue cable	$19.95	$9.95
2 rolls of paper	$19.95	$5.95
Word First • Word Processor	$99.00	$39.95
Data First • Data Base	$99.00	$39.95
Calc First • Spreadsheet	$99.00	$39.95
Total price when bought separately	$2893.85	$892.65

* Built-in the Super Turbo XT

Home & Business

This IBM® XT compatible is perfect for your home and/or business uses. It makes life easier in more ways than you can imagine. Use the system for personal letters, form letters, address storage, listing valuables, figuring finances, school reports, business reports, calculations, business projections...the list can go on and on. With the addition of some of the thousands of software programs available for IBM® you can increase the capabilities of your system even further. A terrific home improvement, business enhancer, entertainment center & educational aid!

Save over $275.00 off sale prices!

Complete System only $599

IBM® is the trademark of International Business Machines Inc.

VISA - MASTERCARD - C.O.D. **Shipping, Handling & Insurance Charges and Information** VISA - MASTERCARD - C.O.D.

Add $35.00 for shipping, handling and insurance. Illinois residents please add 6½% sales tax. Add $70.00 for CANADA, PUERTO RICO, HAWAII, ALASKA and APO-FPO. All orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA & PUERTO RICO. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice. Please call for C.O.D. charges.

MasterCard

CALL COMPUTER DIRECT AT (312) 382-5050 or 382-5244

8am - 8pm CST Weekdays / 9am - 12 noon Saturdays

VISA

CIRCLE 034 ON READER SERVICE CARD

THE ST RESOURCE

ANTIC JUNE 1987



CONTENTS

A LITTLE GEM	**58**
ST REVIEWS	**64**
AEGIS ANIMATOR AND ART PAK	**69**
ST PRODUCT NEWS	**73**
ALICE—THE PERSONAL PASCAL	**75**
GFA BASIC	**79**

ST Disk Subscribers: For instructions on how to transfer **Antic** ST programs to 3½-inch disk, see ST Help File on Side B of monthly disk. ST programs from previous issues are available in 3½-inch format from The Catalog.

A LITTLE GEM
Get started in GEM programming

BY PATRICK BASS, ST RESOURCE TECHNICAL EDITOR

Programming the ST series computer by using calls to the GEM interface is a lot like learning to fly a jet plane. It can be done easily if you're familiar with all the switches and buttons to press, but if you're not, you won't be able to get very far off the ground.

Before jet pilots can start flying, they've got to perform some standard duties first: check out the aircraft, climb in, close the canopy, start 'er up and go. Before we can start to program the ST with GEM we have some duties to perform also.

No, we don't have to close the canopy, but GEM has lots of switches and conditions which must be flipped and met before we can get any work out of it. GEM is very smart about some aspects of its work, but when starting out, there are a few things we must specifically tell it to do.

What does GEM want to know? Basically, there are 22 things we need to tell it, ranging from where GEM's "Blackboard" is to which linetype, text style and color to use. We'll cover each of these in detail below.

THE PROGRAM

This month, we present a program "shell," which you can use as a base to build any other program out of GEM. It contains only the essential features GEM needs for power-up. Using this file will allow you to concentrate on the logic of your program, and not worry about how to kick-start GEM.

TYPING IT IN

Carefully type in Listing 1., GEMSHELL.C, with your favorite word processor and save a copy to your disk. There are no special instructions or tricky lines. 1ST Word, MicroEMACS, or Word Writer are perfect for this job. If you insist on using ST Writer, you'll have to PRINT the file to disk, using a left margin of zero, a right margin of 79, set the top and bottom margins at zero, and edit out the page breaks later.

After you've saved your file to disk, construct the proper batch file for your flavor of C and compile your program shell down to a program, so we can see how it works.

BATCHING IT UP

With the Developers' C, we'll need to create our Batch File first. This is a file which holds all of the commands normally needed to complete compilation of a program. For example, using Developers' C, we need to pass our typed-in source code through six primary and two secondary programs before we can call it a program. If we did these steps one at a time, we would have to type in the instructions for each stage of the compilation at each step.

When we create a Batch File, we type in the instructions once, save it, and then direct the Batch Program (BATCH.PRG) to execute the instructions, line-by-line. For places where we need specific filenames or conditions, Batch allows us to use *parameters*, which act like placeholders in the Batch File, and are replaced by the filename or condition you type when you activate the Batch Program. Let's create the batch file for our shell program. It's quite short, as you can see:

```
cp68  %1.c  %1.i
c068  %1.i  %1.1  %1.2  %1.3 -f
c168  %1.1  %1.2  %1.s
rm  %1.i
rm  %1.1
rm  %1.2
as68  -l -u  %1.s
rm  %1.s
link68 [u,s]  %1.68k= apstart,
%1, vdibind, aesbind, osbind, libf
relmod  %1.68K  %1.prg
rm  %1.o
rm  %1.68k
wait
```

Again, type it in using your favorite word processor and

save a copy to disk. What exactly does each line do? Let's follow it and see. First, however, keep in mind what happens when we double-click on BATCH.PRG to activate it. A small "Open Applications" dialog box pops up, where we are expected to type in the filename *sans extender* of the Batch File to activate, a space, and the filename *sans extender* of the file to work on. For our example we'll type in "C GEMSHELL" and tap [RETURN]. The "C" will be the filename of our Batch File (C.BAT), and "GEMSHELL" is the name of the file to work on. When you type in the filename, it will be considered a parameter to be passed to the C.BAT file.

FOLLOWING BATCH

Now we'll follow the Batch File as it processes the compilation of our program. In the example below, the "percent" sign/number is what BATCH.PRG uses as a parameter holder. There may be up to ten parameters passed.

CP68 %1.c %1.i means the preprocessor, CP68.PRG, will accept a file called **whatever.c**, work on it changing

> **All C programs must have a function called (). It's the only way the compiler knows where the real start of the program is.**

the **#defines** into what they were **#defined** as, and then will output a file called **whatever.i**. **C068 %1.i %1.1 %1.2 %1.3 -f** tells how the first pass of the C compiler, C068.PRG (the parser) will accept the **whatever.i** file from CP68.PRG, work on it, and create up to three files, **whatever.1**, **whatever.2**, and **whatever.3**. **C168 %1.1 %1.2 %1.s** describes how the second pass of the C compiler (the code generator) will take the **whatever.1** and **whatever.2** files as input, finish the compilation, and output a **whatever.s** file, which is nothing but pure ASCII 68000 assembler source code. Yes, the format is a little funny, because a machine wrote it and a machine is destined to read it, but it's source code nonetheless. It's at this point you will eventually go in and "optimize" the code, because compilers are (taken as a whole) pretty stupid when it comes to writing assembly language source code.

So what the Batch file has done so far is take your typewritten C source code, and convert it into standard 68000 assembly source code. What's next?

Well, right now we have three files on the disk we don't need anymore. The **whatever.i**, **whatever.1**, and **whatever.2** files. Since we don't need them, we pass their names to a program called RM.PRG, which removes (deletes, erases) the file from the disk. The next line which does something new comes after the three "removefile:" lines. **as68 -l -u %1.s** shows how the assembler, AS68.PRG, will take the source code just generated (**whatever.s**) and assemble it into an object code program. While we show it what file to pick up, we don't need to give it a name for an output file, since it is a convention that assemblers output an **.o** file, standing for "object" code. The *switches* **-l** and **-u** tell AS68.PRG to ensure all address constants are coded as longwords and to handle all unresolved labels as being globally defined. When this section is finished, we should find a **whatever.o** file on the disk.

LINKABILITIES

Before we progress further, we need to study something a little more closely. The languages available on the ST series computer allow you to do something the Atari 8-bits can't. Say, for example, you have written a large program which takes thirty minutes to compile. On the Atari 8-bits, you need to assemble the entire file at the same time. Even if you make just one small change, you still need to perform the entire job over again. With the ST, however, you may break the individual sections of the program apart, assemble each of them separately, and then glue them all together right before you need the program. If you make a small change in one section, you need to reassemble only that section, and then glue it back into the original group.

If you wish, you may preassemble different subroutines you know you'll need in every program you write, like printing values to the screen, and then just glue them in when you need them. In practice, gluing this chain of **.o** files together is described as *linking* the program. Atari, staying a jump ahead of us, has already preassembled the roughly 300 subroutines/functions GEM needs into three small packages just waiting for you. All you need to do is *link* the proper ones in when you compile your program. These three files are called AESBIND, VDIBIND, and OSBIND. As their names imply, AESBIND holds the subroutines for interaction with the AES Library inside GEM, VDIBIND will let you interact with the VDI Library, and OSBIND holds the calls to GEMDOS, BIOS, and XBIOS.

Now, to get back to our Batch File, the next line is: **link68 [u,s] %1.68k= apstart, %1, vdibind, aesbind, osbind, libf**, which breaks down as follows. **link68** is the name of the linker program, LINK68.PRG. It gets passed two flags in our example, **[u,s]**, which means "ignore the presence of undefined symbols in the input files, and please generate a symbol table." Next we find the parameter, which for us is the filename typed in, **whatever**, given an extender of **.68k**, which is the type of file produced by the linker. It will be made up of the list of files behind it all linked together. The first file, **APSTART** (Application Start) is a short section of code which will determine how large your program is, reserves that much memory, and then releases the rest of memory. This is because when a program starts running under TOS, it "owns" all of memory, and normally we don't need it all.

continued on next page

So the Atari ST will create the file **whatever.68k** out of the files APSTART.o, **whatever.o**, VDIBIND.o, AESBIND.o OSBIND.o and LIBF.o. Notice the **.o** extenders aren't needed in this example, since LINK68 only recognizes an object file for linking purposes. When the linker is finished, the file **whatever.68K** is technically an absolute file, meant to run at a single particular address in memory. This is a no-no for the ST, so we need to run the **.68K** file through one more file, called RELMOD.

relmod %1.68k %1.prg describes how RELMOD.PRG will accept the **.68k** file the linker produces, resolve all relocation information inside the file, and output a completely relocatable **.PRG** file. I'm sure you've seen that **.PRG** extender before. The **.PRG** file is what winds up on your desktop as the executable program you double-click on.

However, before we leave we have two files to erase. Run the newly-created **.o** and **.68k** files into RM.PRG, and they disappear. This leaves nothing to do but run WAIT.PRG, which simply holds the screen and stops until you press any key. This allows you to come back and see if anything went wrong during the compile.

With the ST, you can break a program apart, assemble each section separately, and then glue them all together right before you need the program.

That takes us through the contents and operation of the BATCH file.

PROGRAM WALK-THROUGH

As I described earlier, the program this month is really a sub-program we mean for you to build on. This provides a stable "base" for your logic and code. Let's examine the program line by line.

The top seven lines are remarks, like REM in Atari BASIC. Here's where I put the program title and copyright information. The two lines right below them which start with **#define** will work with the preprocessor CP68.PRG to replace the first string (example: TRUE) with what comes after it on the same line (example: 1). This can be very powerful, but here we use it just to redefine two words.

Next we **#include** a file called OSBIND.H . The **.h** extender tells us this is a *header* file, which typically contains definitions or reusable code for inclusion with your C programs. This file contains all of the definitions for interaction with GEMDOS, BIOS and XBIOS. You may SHOW **osbind.h** to the TV screen if you desire to read it. When the C compiler gets to the **#include** line, it will stop and search for the file requested. If found, the file is opened, and information is compiled out of that file until it is finished, at which time the compiler will return to the next line down in our program and continue.

VARIABLE SPACE

The C language, like most any assembled language, requires us to reserve space for variables before we use them. With the Developers'C, an **int** declaration will reserve 16 bits (two bytes/one word) of memory for each variable name stated, unless the variable is an array, in which case the subscript number inside the array declaration tells us how many "ints" to reserve.

We run into that below the **#include** line , where we reserve space for the variables we'll need to use here. We'll examine each one of them. The first five declarations are where GEM keeps its "Blackboard." We need to communicate with GEM somehow, so we've set up a space where we can write numbers to GEM, GEM can find them, work on them, and then write its answers back out to us. This works a lot like a blackboard.

This is set up as a series of five arrays. CONTRL has 12 spaces reserved, and is where we put Control numbers, like commands. INTIN and PTSIN both reserve 256 places, and is where we place numbers and coordinate points for GEM to find them. INTIN stands for Integers-In and PTSIN stands for Points-In. INTOUT and PTSOUT are, cleverly enough, where GEM places its answers for us to find. INTOUT stands for Integers-Out, and PTSOUT stands for Points-Out. Next, WORKIN is an array which is pre-initialized, or rather the array is filled when it is declared. WORKIN holds eleven default values for GEM when it powers up. The default values are:

0: Device ID number.
1: LineType
2: Polyline Color
3: Marker Type
4: PolyMarker Color
5: Text face
6: Text Color
7: Fill interior style
8: Fill style index
9: Fill color
10: NDC to RC flag.

Notice all of the default values are 1, with the exception of the last entry, which tells GEM we want to use Raster Coordinates instead of Normalized Device Coordinates. Why? Well, even though Normalized Device Coordinates would give us resolution up to 32,767×32,767, we can't use it because GDOS isn't supplied with the machine. We specify Raster Coordinates so we can use typical ST screen resolutions (320×200, 640×200, 640×400).

Next in line is the array **workout**, where GEM will return a world of information about what type of terminal GEM thinks it's operating on. Almost anything about the machine can be found here, from whether the terminal supports color, to if you may rotate text on the output

device.

The bottom line in the variable definition section holds place for the variables **i**, **finished**, and **gem_handle**. The variable **i** will be used as a dummy placeholder, **finished** is used as a flag to show if we are *finished* (TRUE/FALSE), and **gem_handle** is used as the place we keep the identification number (for our application) GEM will assign to us when we power up the program.

THE MAIN SECTION

All C programs must have a function called **main()**. It is the only way the compiler knows where the real start of the program is. In C, **main()** may come at the start, middle, or end of the file. It doesn't matter. However, here we put it at the start of the program.

There is also a convention in writing C programs for the Atari ST you should know about. When reading an ST C program, how do you know which functions are supplied by the ST, and which are supplied by the writer of the program? Basically, any function call that begins with a lowercase letter "v" is a call to the VDI library. Examples include **v_pline()** and **v_opnvwk()**. Function calls to the AES library fall into eleven different groups.

Programming the ST with calls to GEM is like learning to fly a jet plane—if you're not familiar with all the switches and buttons, you won't get off the ground.

1. APPL_ Applications Library
2. EVNT_ Events Library
3. MENU_ Menu Library
4. OBJC_ Objects Library
5. FORM_ Forms Library
6. GRAF_ Graphics Library
7. SCRP_ Scrap Library
8. FSEL_ File Selector Library
9. WIND_ Windows Library
10. RSRC_ Resources Library
11. SHEL_ Shell Library

Function calls to GEMDOS, BIOS, or XBIOS will start with a capital letter, for example, **Setscreen()** and **Fread()**.

So, inside our **main()** function, the very first function called is **initialize()**. When the program passes this point, it will make (in essence) a subroutine call to a function called **initialize()**, perform it,and then return to the next line down in **main()**.

This turns out to be where the gist of the function lies. The line reads as: "Do your work while not finished." The exclamation point means NOT to C. The function **your_work()** is where you would insert your own section of C code for the program to execute. Eventually, your program code should decide it has finished its job, and control will pass to the next line down, which has the **terminate()** function call. This call will properly clean up and exit your application, and return you to the GEM desktop.

THE INITIAL STEP

The function **initialize()** shows just what needs to be tweaked in GEM to get your application up and running. Let's take it line-by-line.

First, the **appl_init()** (application initialize) call will inform GEM a new application is starting up. Next, the **graf_handle()** call will return the number GEM has assigned as the identification number for your application. In our example, we place the returned number into the variable **gem_handle**.

The most important call here is **v_opnvwk()**, which stands for "VDI-Open Virtual Workstation" and actually begins the interaction with GEM. From this point on, you need to follow (and adhere to) GEM programming standards. Notice that the call requires three parameters: Our **workin** array, which we initialized up in the variable definitions section; the address of the variable **gem_handle**, so GEM will know where to put the identification number; and the **workout** array, where GEM will return answers to us.

And right before we leave **initialize()**, since we're fairly certain we haven't finished with the program yet, we set the value in the variable **finished** to FALSE.

WORKING FOR YOURSELF

In the function **your_work()**, we've simply included a sample line which will put an Alert Box onscreen to tell you you've made it that far. In practice, you'll want to put your own C code here. The **form_alert()** function actually puts the box onscreen. When you click on the [Exit] button inside the Alert Box, our sample program has finished, so we set the variable **finished** to TRUE.

THE TERMINATOR

There are only two function calls to exit a GEM application. First, **v_clsvwk()** will close the Virtual Workstation you opened earlier and disconnect you from GEM, and the function **appl_exit()** performs the action of releasing the memory your application used and returning you to the GEM desktop.

IS THAT ALL?

Believe it or not, that's all you need to begin programming your own applications using the GEM interface. Now, for your assignment, I want all of you to write PACMAN in C and have it ready tomorrow. Class dismissed.

Listing on page 93

Lyco Computer
Marketing & Consultants

SINCE 1981

TO ORDER
CALL TOLL FREE
1-800-233-8760
in PA
(717) 494-1030
or send to
Lyco Computer
P.O. Box 5088
Jersey Shore, PA 17740

CUSTOMER SERVICE
(717) 494-1670
Mon. - Fri. 9AM - 5PM

HOURS
Mon. - Thurs. 9AM-8PM
Fri. 9AM-6PM
Sat. 10AM-6PM

MASTERCARD VISA

RISK FREE POLICY

In-stock items shipped within 24 hrs. of order. No deposit on C.O.D. orders. Free shipping on prepaid cash orders within the continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO and international orders add $5.00 plus 3% for priority mail. Advertised prices show 4% discount for cash, add 4% for Master Card and VISA. Personal checks require 4 weeks clearance before shipping. We cannot guarantee compatibility. We only ship factory fresh merchandise. Ask about UPS Blue and red label shipping. All merchandise carried under manufacturer's warranty. Return restriction applicable. Return authorization required. All items subject to change without notice.



ATARI SOFTWARE

SSI
- Battle of Antetiem $32.95
- NAM $24.95
- Wargame Construction .. $18.95
- Wizard's Crown $24.95
- Warship $39.95

EPYX
- Elddon $22.95
- Karate Champ $18.95
- Koronis Rift $22.95
- Summer Games $24.95

ACCESS Software Incorporated
- Leader board $24.95
- Tournament #1 .... $14.95
- Triple Pack $14.95
- 10th Frame $24.95

Datasoft Inc.
- Gunslinger $20.75
- Conan $14.95
- Alternate Reality The Dungeon $22.75

DISK STORAGE
- Flip-N-File 10 .... 2.49

JOYSTICKS
- Bat handle 16.75
- Boss 11.99

ACTIVISION
- Hacker $15.95
- Hitch Hikers $22.95
- Leather Goddesses ... $22.95
- Moonmist $22.95
- Music Studio $22.95

subLOGIC
- Flight Sim II $31.95
- Night Mission Pinball .. $21.95
- Scenery #1 - #6 .... $69.95
- Scenery Disks, each .. $14.95

OSS™ Precision Software Tools
- Action $46.95
- Action Tool Kit $18.95
- Basic XE $46.95
- Basic XL $36.95
- Basic XL Tool Kit $18.95
- Mac 65 .... $46.95
- Mac 65 Tool Kit $18.95

PRINTER SUPPLIES
- 1000 9½x11 white lazer 19.95
- 200 9½x11 white lazer 5.95
- 3000 9½x11 white 29.95

ZOOM
- Zoomracks $54.95
- Zoomracks II $79.95

Broderbund Software
- Print Shop $25.75
- Print Shop Companion .. $22.75
- Graphic Library I, II, III . $15.75
- Karateka $18.75
- Bank St. Writer $29.75

MicroProse
- Conflict in Nam $24.95
- Decision in Desert ... $24.95
- F-15 Strike Eagle $22.95
- Kennedy Approach ... $19.95
- Silent Service $22.95
- Top Gunner $19.95

MICROLEAGUE
- Microleague Baseball . $24.95
- General Manager $24.95
- Stat Disk $17.95
- '86 Team Disk $14.95

INFOCOM
- Leather Goddesses ... $24.75
- Moonmist $24.75
- Hollywood Hi-Jynx ... $24.75

VIP
- Accounts $174.95
- VIP Professional $124.95
- VIP Professional Lite .. $74.95

ZOOM
- Zoomracks $54.95
- Zoomracks II $79.95

ACTIVISION — ATARI ST
- Ballyhoo $23.95
- Borrowed Time $32.95
- Champ. Basketball $28.95
- Champ. Baseball $29.95
- Champ. Golf .... $NEW
- Game Maker .... $NEW
- Hacker 2 .... $32.95
- Hacker $28.95
- Leather Goddesses $23.95
- Little People $32.95
- Moon Mist $23.95
- Music Studio $37.95
- Paint Works $43.95
- Portal $34.95
- Shanghai $28.95
- Tass Times $32.95

Datasoft Inc. — ATARI ST
- Mercenary $26.75
- Mercenary 2nd City $17.95

OSS — ATARI ST
- Personal Pascal $48.95
- Personal Prolog $51.75

MicroProse — ATARI ST
- Silent Service $24.95
- F-15 Strike Eagle $24.75

ACCESS Software Incorporated — ATARI ST
- Leaderboard $24.75
- Tournament Dsk 1 .... $15.75
- 10th Frame $24.75

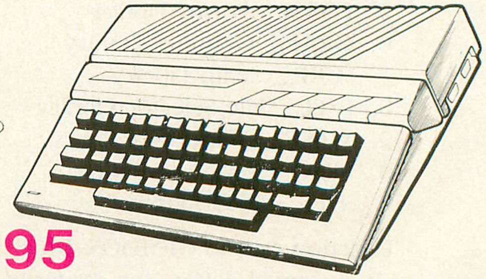
WE STOCK OVER 5000 SOFTWARE TITLES!

DISKETTES

	5¼	3.5
MAXELL		
SSDD	$9.99	$16.99
DSDD	$12.99	$23.99
BONUS		
SSDD	$6.99	—
DSDD	$7.50	—
SKC		
SSDD	$8.50	$14.99
DSDD	$9.50	$16.99
DSHD	$16.99	—
VERBATIM		
SSDD	$9.99	$16.99
DSDD	$12.99	$24.99

Call for generic diskette pricing!

ATARI®



$479.95
130 XE Computer Special
(system special includes interface)
with
ATARI 1050 DISK DRIVE
and a
STAR NP-10 PRINTER

1-800-233-8760



Lyco Computer is one of the oldest and most established computer suppliers in America. Because we are dedicated to satisfying every customer, we have earned our reputation as the best in the business. And, our six years of experience in computer marketing is your assurance of knowledgeable service and quality merchandise.

SAVE ON THESE IN STOCK PRINTERS!

STAR MICRONICS

NX-10	$195
NL-10	$209
NP-10	$169
SD-10	$259
NB-15	$889
ND-15	$425
NX-15	$329
NR-15	$529
NB 24-15	$729

SILVER REED

EXP 420P	$209
EXP 600P	$539
EXP 800P	$649

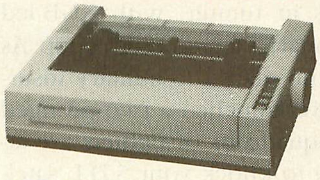
SEIKOSHA

SP-1200AS	$195
SP-1200AI	$195
BP-5420	$1075
BP-5420 ribbon	$12.50
MP 5300AI	$549
Color Kit	$119
MP 1300AI	$369

PANASONIC

1080i	$195
1091i	$269
1092i	$335
1592	$399
1595	$499
3131	$249
3151	$379

Panasonic



1080i **$195**
2-year warranty

LEGEND

808	$159
1080	$199
1380	$229
1385	$289

CITIZEN

120-D	$179
MSP-10	$285
MSP-15	$385
MSP-20	$325
MSP-25	$485
Premier 35	$469

JUKI

6100	$399
5510 w/color	$435
6300	$739
RS-232 serial board	$55

EPSON

LX 86	$209
EX-800	$355
EX-1000	$579
LQ-800	$449
LQ-1000	$659
FX-286e	$519
FX-86e	$369

MONITORS

HITACHI	
MM-1218 12" Green	$99
ZENITH	
ZVM 1220	$89
ZVM 1230	$89
COMMODORE	
1802	$189

INTERFACING

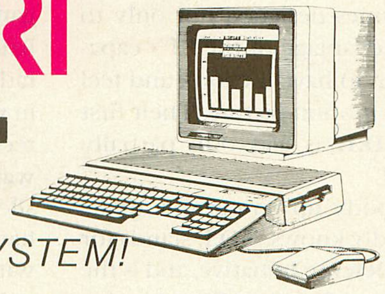
XETEC	$39.95
PR Connection	$59.95
Atari 850	$109.95
Atari 1150	$49.95
Supra Microprint	$39.95

MODEMS

HAYES	
Smartmodem 300	$125
Smartmodem 1200	$369
Smartmodem 2400	$559
ATARI	
XM-301	$42.95
SX-212	$89.95
AVATEX	
1200	$89
1200hc	$119
2400	NEW

ATARI®

1040ST



1040 ST MONO SYSTEM!
with a
SEIKOSHA 1200 AI PRINTER
requires printer cable

LYCO PROVIDES A 90 DAY WARRANTY ON ATARI PRODUCTS AT NO EXTRA CHARGE

$899.95

ST PRODUCT NEWS

ST Reviews

S.D.I.

Mindscape
3444 Dundee Rd.
Northbrook, ILLINOIS 60062
(312)480-7667
$44.95

CIRCLE 225 ON READER SERVICE CARD

Reviewed by Harvey Bernstein

Most games released so far for the ST are but mere conversions from other machines. Very few software companies have yet taken the time and/or effort to create games with the depth and graphics which the ST is capable of. Of course, this is typical of many powerful computers. However, the folks at Mindscape have started to release their long-awaited Cinemaware series—games designed not only to take full advantage of the ST's capabilities, but to have the look and feel of an epic motion picture. Their first release, **S.D.I.**, is, alas, only partially successful.

As anybody up on current affairs undoubtedly knows, S.D.I. stands for Strategic Defense Initiative, and is the formal title of President Reagan's plan for a network of satellites to prevent a nuclear attack on the U.S. S.D.I.—The Game is set 30 years in the future and is based on the premise that the grid of satellites is already in place and functioning. As Sloan McCormick, you are in command of the S.D.I. force, making sure the satellites are in working condition and constantly monitoring for enemy attack.

As the game begins, the Soviet Union is in tumult, with KGB-led revolutionaries attempting a coup. As part of the plan, the military insurgents have launched a two-pronged attack. Squadrons of fighters are attempting to knock your S.D.I. satellites out of commission, to be followed by a nuclear attack on the U.S. The first part of the game involves juggling 3 separate but interconnected arcade games. After mastering your shuttlecraft (a very basic flight simulator), you must patrol the area around your satellites, both intercepting and destroying the Soviet attack craft, as well as tracking and repairing damaged satellites. This part of the game is basically a variation of Star Raiders, with first-person perspective, radar, and radio messages to help you in your quest. Every so often, you will receive a radio message from Earth warning of an imminent Soviet missile launch. When this happens, you have exactly two minutes to dock with your space station (no easy task!), refuel and regenerate your ship, and return to command headquarters. From there, you go to the S.D.I. control module, and use your satellites to fire laser beams at the incoming missiles, hoping to destroy them before they land on their assigned targets. The fewer working satellites (remember to keep them in repair!), the tougher it is to shoot down the missiles. If this sounds like a souped-up version of Missile Command, that's basically what it is. So goes the first portion of the game—you swing back and forth between combat in space and shooting down missiles.

Meanwhile, back at the Soviet space station, your old friend Talya is attempting to hold off KGB troops. Eventually, if you've survived several waves of attack ships and missiles, she will radio for help. When that happens, you have four minutes to dock with the Soviet station, and shoot your way past several rooms of guards in order to rescue her. Once having done so, you can return to your fighter (you hope), shoot down the last of the rebel ships and live happily ever after.

Basically, S.D.I. is a series of old arcade games strung together in a fairly novel format. I found the concept of a movie-like game to be an interesting one, but unfortunately, this one doesn't have the depth to carry the idea to its full potential. In fact, moving between shooting down spaceships and shooting down missiles becomes fairly repetitious after a while. While the graphics are exceptional, actually resembling comic-book art, the play itself is inconsistent. During the Missile Command-like phase, the

continued on page 66

joystick response seems sluggish. Yet during the Star Raiders-style game, there was too much response, with slight joystick motion resulting in wild ship movements.

So I just have one question. If S.D.I. is somewhat difficult to play and not as original as it pretends to be, why do I find myself playing it again and again? I don't know, but once I get into it, it holds a bizarre fascination as few other games do. And if that's not a recommendation, I don't know what is.

LEADER BOARD

Access Software Inc.
2561 South 1560 West, Suite A
Woods Cross, Utah 84087
(801) 298-9077
$39.95

CIRCLE **251** ON READER SERVICE CARD

Reviewed by Mark Weaver

All is quiet as Mark Weaver walks up to the green. His outstanding drive allowed him to use his pitching wedge on his second shot. He putts. . . It's good! Mark Weaver has made a 20-foot putt to win the U.S. Open—with six under par for the day and 12 under for the tournament.

Well, at least that's how I felt when I played **Leader Board**. The intriguing graphics, easy play and clear documentation will keep you happy for hours as you try to come in under par.

This game's best feature is probably its 3-D graphics, which lets you see the shot from about 10 yards behind the onscreen golfer. The screen creates the illusion of looking down a real fairway. The city in the background even gave me the feeling of being on a golf course after a hard day at the office. When the golfer on the screen swings, it's nice and smooth with no blur or flicker. I would love to have a real-life swing like that.

Leader Board allows up to four players with novice, amateur and professional skill levels. Each level brings in more factors, such as wind and ball control. After you master the four courses on the disk, you can buy course disks from Access Software for $19.95. The manual explains how to score the game in stroke, match or best-ball play. However, the computer only keeps score for stroke play.

Choosing a club and hitting a ball is done with the mouse. To aim, press the left button and move the mouse sideways. To hit the ball, press and hold the right button, release it and press it again. This will take some time to master, but once you've done it you'll have no trouble playing up — or down—to par. The documentation tells you to practice at the driving range. Unfortunately, learning the putting greens is the only confusing part of the game.

The program doesn't play entirely by standard golf rules. For instance, when the player hits the ball into the water, it counts the stroke and makes the player play the ball from the same spot, instead of where it entered the water. I also have never hit the ball out of bounds, although I have sent it off the screen.

Still, I recommend Leader Board as an entertaining game for anyone, regardless of skill and knowledge of golf.

M-Disk Plus

MichTron
576 S. Telegraph
Pontiac, Michigan 48053
(313) 334-5700
$39.95

CIRCLE **230** ON READER SERVICE CARD

Reviewed by Sol Guber

One of the advantages of owning an Atari ST is having lots of memory, which you can use to speed up operations. One of the most time-consuming personal computer operations is waiting for a printer to finish its job —printing a document. The second-longest wait, possibly, is when your computer is accessing files from the disk drive. **M-Disk Plus** contains two simple ST utilities: a printer spooler and a RAMdisk program, which make the aforementioned operations less tedious.

For those of you who are new to high-speed computing the next few paragraphs are for you. My good printer will put out about 120 characters per second (cps) when typing in the standard fonts (excluding underlining or anything else unusual). Once my ribbon gets old, I type everything in **bold**. When I want to print in a proportional font, my speedy 120 cps printer drops down to about 30 cps. This translates to a double-spaced page every minute. While I type at nowhere near this speed, it does mean a long wait to regain access to my computer while it's printing out a ten-page report.

A printer spooler alleviates this long wait. What a spooler program does is set aside a small part of memory which the computer interprets as your printer. The computer will then send, very quickly, all the characters in your file to this spot in memory, then the spooler sends the information slowly out to your printer at a speed the printer can handle. A good spooler is transparent: You shouldn't even be aware it's there. When you feed your information to the printer spooler, it will hold it in its memory, begin printing, and the instant it has your entire file stored, it will free up your computer, allowing you to do other work.

A RAMdisk is an area in your computer's memory that pretends to be a disk drive. When information is sent to the RAMdisk you can retrieve it almost instantaneously. Disk access time is virtually zero. A good RAMdisk is also transparent. Your pro-

continued on page 68

grams should act as if they were going out to a separate piece of hardware. A RAMdisk speeds up file copying and programs which need a great deal of disk access, like compilers. However, you must remember to save the information on your RAMdisk back to a regular floppy disk drive before turning off your computer—since your information is in RAM, powering-down will eliminate it from memory.

MichTron's M-Disk Plus is a combination printer spooler/RAMdisk. These programs are quite small and are not copy-protected, so they can be put into any AUTO file to be loaded when you boot your system. The disk also contains a configuration program which will inquire what spooler or RAMdisk you want. It will write this information onto the program itself, so that the configuration needs to be done only once.

Both of these programs are quite useful and are needed for almost any application. They work well and are easily installed. The four-page manual explains many of the details you need to put these programs onto a disk and how to use them. If you do not have a good printer spooler and a good RAMdisk, do not pass up this package.

NINE PRINCES IN AMBER

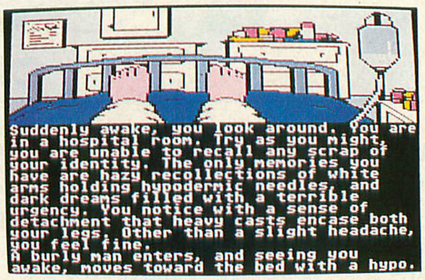
Telarium Corp.
One Kendal Square
Cambridge, MA 02139
(617) 494-1224
$39.96

CIRCLE **278** ON READER SERVICE CARD

Reviewed by Jim Pierson-Perry

Even after completing this adventure several times, I am still uncertain how to describe it best. While **Nine Princes in Amber** is basically an adventure game adaptation of the first two books in the Amber fantasy series by Roger Zelazny, there are also elements of logic puzzles, arcade gaming and political simulations. Complicating the play are uneven plot pacing and content ranging from the exciting to the banal.

You are the exiled Prince Corwin, whose goal is to win his way back to Amber and its kingship. What makes your life, and this game, interesting is



You must decide the series of moves and counters so you can emerge either victorious or as dog food.

a collection of siblings who make the Borgia family resemble the Brady Bunch by comparison.

The program comes on two disks with supporting documentation that describes the current situation in Amber, basic rules of swordsmanship and a listing of recognized verbs. The latter is of paramount importance, due equally to a substandard parser (most accepted inputs are of the early "noun plus verb" vintage), and the unusual verbs used (such as shrug, maybe, continue) that would not be guessed readily by most adventure gamers.

Evidently the program is a direct port of its initial release for the Apple and Commodore 8-bit computers, and it shows. There is no attempt to take advantage of the ST's capabilities. Graphics are mediocre and the few sound effects contribute nothing.

My problem with this game is that it is essentially a computerized "Classics Illustrated" adaptation of the books rather than an adventure game in the Infocom or even Scott Adams tradition. Maybe that was intended, but I expected more. The plot is so faithful to the books that there are no surprises for players who have read them. There are only two real puzzles, both of low difficulty. Completing the game took about two (interrupted) hours.

But (with a capital B) completing the adventure is where this game becomes interesting. That's right: only after finishing it the first time do you realize the scheming of your family members, and how these maneuvers can lead to your kingship, assassination, exile, or any one of 40 possible endings. The name of the game is political alliances, which in Amber are about as trustworthy as a promise from J.R. Ewing. Several times I've jumped back into mid-play (bless all those game saves) and tried different tactics to influence the outcome.

The other source of fun is an all-too-short sword fight segment reminiscent of the fight with the troll in Zork I. Although all text, you must decide the series of moves and counters so you can emerge either victorious or as dog food. It's a shame that this only occurs at one stage and not as a challenge throughout the adventure.

Unfortunately, this game comes up short. It's simply not interesting or well-executed enough to be recommended. It might have been acceptable a few years ago on an 8-bit machine, but is now too outdated and outclassed—particularly given its relatively high price. I suggest you use your money instead to buy an adventure game worthy of the ST, like The Pawn, and with the change buy the original Amber series books.

AEGIS ANIMATOR ST AND ART PAK ST

Design your own computerized cartoons

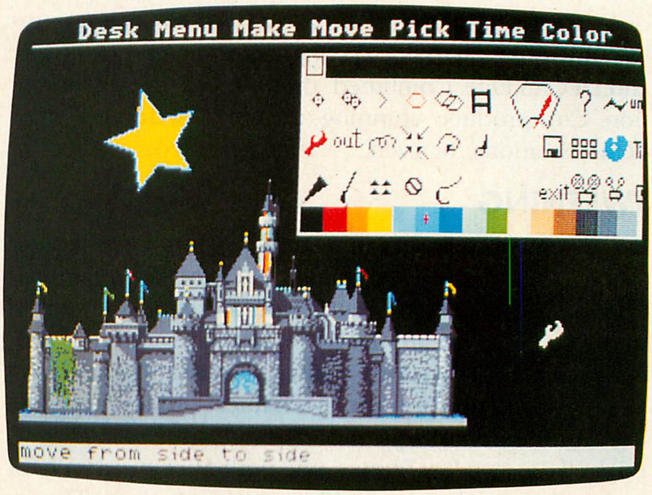
Reviewed by Matthew G. Loveless
START Consulting Editor

A faint light glows amidst a starry background. It darts playfully from side to side, then pauses mysteriously, pulsating slowly as if deciding what to do next—a lonely force in an empty universe. Flash! The screen brightens momentarily, shooting beams of stormy light from behind an imaginary horizon. A corporate logo appears in the maelstrom and moves forward, rotating, growing as it comes closer. The camera tilts downward, showing the Lincoln Memorial as the logo floats high above. The stars brighten and the logo fades, leaving the landmark structure alone under the night sky.

A new 15-second TV spot? The latest Lucasfilm magic created on a $50,000 graphics workstation? The sequel to Tron? No, none of the above. Try an Atari ST running the impressively powerful **Aegis Animator ST.** Full-scale, high-level computer animation has finally arrived for the Atari.

The Aegis Animator was first implemented on the Commodore Amiga over a year ago. When that version was finished, Jim Kent, the program author and now a SYSOP on the ST section of Byte's BIX, wasted no time translating it to the Atari. The Amiga version has been heralded as one of the finest low-cost animation systems ever available. In fact, professional animator Overton Lloyd used it in a new music video by Parliament called "Do you want shake with your fries?" And, the Danny Elfman-led group Oingo Boingo plays a taped Animator sequence on a giant screen while they perform at their concerts. Animator ST has all the features of the Amiga version, plus a few extra niceties thrown in for good measure. And, lest we Atari owners feel second best, William Volk of Aegis claims the Atari not only produces a sharper picture, but that metamorphic animations actually run faster on the ST.

Animator ST requires a color monitor and only runs in low-resolution. It comes on a single-sided disk with a 100+ page spiral-bound instruction manual, and it is not copy-protected. The Animator will run on a 512K machine, but Aegis recommends a megabyte or more for complex animations. I tried it on a standard 520ST and found enough memory to create sophisticated animations. But I was limited in my cut and paste abilities in the storyboard. It is certainly workable in a 1/2 megabyte, but dreams of five- and ten-minute animations are a powerful incentive for a memory upgrade.



There is no provision for using the animations within your own programs. You need either the animator itself or the PLAYER.PRG program. PLAYER.PRG is supplied on the program disk and Aegis lets you distribute it freely, so you can create your own animations and give them out with the Player. For those readers who wish to see what Animator ST can do before buying, you can download PLAYER.PRG from CompuServe or GEnie along with some sample animations. My personal favorite is the pyramid animation. The program starts you on an empty workspace with a GEM menu-bar at the top. In the center of the screen is a Fast Menu. The Fast Menu is a movable GEM-like window with icons you can point to and select. Each icon represents a function available in the ani-

continued on next page

mator. Most functions are available from either the Fast Menu or the menu bar, but some are exclusive to one or the other. At first I found the Fast Menu quick and convenient, but as soon as I got more than a couple of objects spread across screen, it became bulky and clumsy, constantly getting in the way of my work. (The Fast Menu takes up a full 1/5 of the usable screen area.) However, it is movable (even off the screen) and it can be easily disabled. I usually turn the Fast Menu on or off depending on the functions I'm using. If I'm doing a lot of disk access and color changes, I'll use the Fast Menu. If I'm manipulating polygons or cels, I'll stick to the drop-downs. Animator ST offers three types of animation: metamorphic, cel, and cyclic. Metamorphic (often just referred to as morphic) animation allows the manipulation and transformation of two-dimensional polygons in a quasi-3D perspective. Cel animation, a term which comes from studio cartoon animators who did much of their work on transparent celluloid, allows the planar movement of color pictures which you can extract from NEOchrome or DEGAS. Cyclic animation allows you to cycle groups of colors, like the color cycling features of NEOchrome and DEGAS Elite. Combined, these three types of animation can produce stunning artwork, seductive sales demonstrations, or even. . . a music video.

TWEENING

Every animation is built up from *key frames,* the atomic units of your sequence. In traditional hand-drawn animation, a professional illustrator would sketch key frames, the portions of the animation representative of the overall movement. Then an assistant (often an apprentice animator) would perform the mechanical process of drawing the in-between sequences. The animator, for example, might draw two key frames, one with Mickey's arm bent at the elbow and one with his arm outstretched. The assistant (or *tweener*) would draw the intermediate positons between bent and outstretched. This process was called *tweening.* When the full sequence was filmed and played back, the motion of the arm would appear smooth and continuous.

All three types of animation (morphic, cel, and cyclic) within Animator ST utilize some form of tweening. You create a key frame, deciding which type of objects should appear, where they should appear, and what color they should be. Then you decide how the objects should move or transform. Animator ST interpolates the intermediate frames and produces a smooth animation. For example, if I wanted to make a shooting star, I could create the star in the upper left hand corner and make that the first key frame. Then I could move the star to the lower right corner of the screen in a large arc, rotate it around its center a couple of times, shrink it to the size of one pixel, fade its color to black, and make the result the second key frame. When I play this back, the star begins bright in the upper left corner. Then it arcs downward while, simultaneously, shrinking, rotatating, and fading to nothingness —all in about a minute's worth of work. Tweens, as the sequences of one key frame to the next are called, determine the speed of the animation. The length of a tween is set in 60ths of a second (the color video refresh rate) and this setting determines how long the tween will last. In other words, a tween length of 60 will last one second. This means whatever transformations which are destined to happen, going from one key frame to the next, will take *exactly* one second. If you decrease the time of a tween, the same amount of activity must now happen in a shorter period of time, hence the events in this tween will occur at a faster rate. The faster you make a tween the coarser the animation becomes (less time to calculate) but the less your eye misses the smoothness (it's happening so fast).

This is a nice feature in the sense that everything can be synchronized with a real-time clock; you'll always know when an event will occur relative to another event and there's no guessing involved. However, the more objects you have on the screen and the more you animate them, the chunkier the animation becomes as Animator ST sacrifices smoothness for time. It's a trial and error process to find the delicate mix of speed and complexity which makes a slick animation. Fortunately, if you are taping, you can halve the global speed (thereby buying Animator ST more number-crunching time) and double the tape playback rate for an overall smoother production.

(JNL Technologies manufactures the Monitor Box composite video generator for the ST, which allows any ST, with or without RF output, to hook directly into a tape machine. For more information, contact Jeremy Berger at (516) 536-3969.—ANTIC ED.)

METAMORPHIC ANIMATION

The single most distinctive aspect of Animator ST is its metamorphic animation. The metamorphic animation is based on single-color polygons, either filled or unfilled. You create a polygon by defining its vertices. A line has two, a square has four, and the Atari Fuji logo might have twenty.

Once you have created a polygon and set it in a key frame, you can move and transform it in a variety of ways. You can rotate it around an axis in any three dimensions, make it shrink or grow, or move it across the screen. You can transform the fundamental shape of the polygon by adding or deleting vertices, stretching the endpoints, or folding edges over one another. You can even mix various forms of movement. For example, while moving laterally across the screen, you can rotate the top half of a polygon, while shrinking the lower half. The combinations are practically limitless.

Objects behave as if they were in a quasi-3-dimensional universe. The Z-dimension is faked (no real-time floating point math here!) and the objects are still two-dimensional. But you can still realize some stunning perspective effects. The Z-coordinate also determines whether one polygon should appear in front of another, allowing you to prioritize your images.

CEL ANIMATION

The best way to think of a cel in Animator ST is as rectangular cutout from a DEGAS or NEOchrome screen, because that's exactly where they come from. You make a cel by pulling up a full screen picture and drawing a rubberbox around the area you wish to use. Once you have a cel defined, you can use it in your animations. I found the cel animation rather "vanilla," almost as if it were added to the program as an afterthought.

It's cumbersome to define cel images, difficult to position them when you pull them into an animation, and limited in the amount of things you can do with them. For example, you can't resize a cel, nor can you change it once you cut it out of a picture without going through a rigamarole of pasting it, saving the screen out, and loading DEGAS or NEOchrome. The turnaround time on building cels into your animation is frustratingly slow, that is, compared to metamorphic animation. Additionally, the manual suggests that you can animate a cel by manually drawing successive images and then deleting and replacing the cel with a new one every tween—good luck. (To Aegis's credit, they do supply just such an animation on the Animator disk.)

However, with all that said, the cel features of Animator ST are better than most available cel-type animators and certainly no worse. I find I use cels for images which don't require sophisticated movement or require a lot of color and a high degree of detail. For example, the Lincoln Memorial mentioned in the first paragraph was a cel. It's a complex image, which couldn't have been created realistically with just polygons, and I only needed to move it vertically an inch or so. It's just a shame cels aren't as easy to use as the program's other features.

CYCLIC ANIMATION

The final type of animation, cyclic, is nothing new to most Atari users. It's merely rotating palette registers. If you've played with the color cycling feature of NEOchrome or DEGAS Elite, you'll find it familiar. The idea is the same, only the approach is a little different. First, you determine the number of iterations you want the range of colors to cycle during any given tween. This means if you have an animation where you want a static image in the background to cycle, you must manually set the number of cycles for each tween or build the cycling into a strip. If you change the speed of the tween, you may have a bit of trouble readjusting your cycling. Second, the cycling doesn't just do a palette rotate, it actually fades one color into its neighboring color. This makes for a smoother transition but effects you designed in one of the paint programs can end up looking strange.

EDITING

Editing animations is cumbersome. You're probably better off planning carefully than going back and fixing mistakes. For example, there is no easy way to insert or delete a key frame and the undo feature has a very short memory. This is very frustrating because something which should be an easy fix may take ten or more minutes of trial and error as you scrap everything and start over.

The cutting and pasting abilities of the storyboard, however, are very nice. You can pull out of an animation and enter the storyboard, a mode where you have six mini-screens, each one of which can hold a different animation. You can then cut and paste between animations. Beware, though, without lots of memory, you won't be able to do much editing on large animations. But, if you do run out of memory, Animator ST will do its best to maintain the integrity of the system and save off your current work into several smaller files.

OTHER FEATURES

Animations are saved out as scripts. A script is a text file which describes every action and every tween within your animation. You can load it into an editor, such as 1ST Word, and modify particular parameters and achieve special effects you can't create from within the Animator itself. This capability makes the animator one of the most powerful systems available, allowing you to customize and edit your animations much like professional animation systems allow. I spend almost as much time editing script files with my word processor as I do working within Animator ST.

High-level animation has finally arrived for the Atari. Animator ST has all the features of the Amiga version, plus a few niceties thrown in for good measure. The Atari not only produces a sharper picture, but metamorphic animations run faster on the ST.

Animation segments can be saved out as strips, also. A strip is a portion of an animation sequence which cannot run alone because it is designed to be mixed into another animation. With this feature, you can loop a common sequence continually or a fixed number of times, and you can mix animations of varying tween arrangements without worrying about how a time change in one will affect the other. My most successful animations were built up from strips. Unfortunately, I didn't pick up on this technique until I had been using the product for quite awhile—the documentation says very little about using strips effectively.

continued on next page

ART PAK

There isn't much to say about the Art Pak, except that it's a collection of predrawn cels, backdrops, and NEOchrome screens, for those of us who aren't accomplished artists. It comes on a double-sided disk. Customers who only have single-sided drives can transfer the files with the help of a friend or a dealer, or they can exchange their double-sided disk for two single-sided ones directly through Aegis.

The art was done by Jim Sax, the well-known computer artist whose work can be seen in the Defender of the Crown CinemaWare game. Art Pak contains a variety of animals from cheetas to elephants, a sampling of buildings from small houses to high rise office buildings, airplanes, cars, and various other objects to play with. Some of the artwork is of dubious usefulness (like a six-inch motorcycle rider), but others I found use for right away (the Lincoln memorial, for example). For the more casual user, Art Pak could be a fun addition to Animator ST.

CONCLUSION

Animator ST has some minor weaknesses and a few nonfatal bugs, but overall it's a slick program. Perhaps its biggest flaw is that it is limited to the ST: I find myself wanting another 500 colors, a higher resolution display, and a faster CPU.

In the proper hands, Animator ST can produce artwork of symphonic proportions. But like a musical instrument, it is difficult to master. Not only do you need some creative impetus, you also need a practiced control of the tools. It's not just a matter of putting tab A into slot B, then pushing a few buttons. Creating a good, original animation is a grueling, albeit rewarding, process. Expect to put in some work.

For the average person, Animator ST is an expensive toy. For the professional, it's a powerful tool. For people like me, the closet artists, it's an indispensable addition to our software libraries.

I just wonder when Jim Kent will start working on version two. I already have my wish list. Are you listening, Aegis?

(For those of you interested in seeing more of Jim Kent's work, see his program Flicker in issue #5 of START, The ST Quarterly, on sale June 1. Flicker is a combination drawing and animation program which will enable you to duplicate some of Animator ST's simpler capabilities. Flicker is also compatible with DEGAS, DEGAS Elite and NEOchrome.—ANTIC ED.)

Aegis Animator ST
Art Pak ST
Aegis Development
2115 Pico Boulevard
Santa Monica, CA 90405
(213) 392-9972
Animator ST $79.95
Art Pak ST $29.95

CIRCLE 227 ON READER SERVICE CARD

ST New Products

By GREGG PEARLMAN, **ANTIC** ASSISTANT EDITOR

OGRE

Originally a strategy board game, **Ogre** ($39.95) lets two players play head to head and design their own battlefields with the built-in game editor. The game pits the Ogre, a Cybertank, against a more conventional force of infantry, armor units and command posts. In the one-player mode, the player can control either the Ogre or the armed forces, and the two-player mode pits two human players against each other as each attempts to outmaneuver, outblast and outlast his or her opponent.

Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7171. PRESS.
CIRCLE **229** ON READER SERVICE CARD

MUSIC FROM SONUS

With **MasterPiece**, **GlassTracks** and **SuperScore** from Sonus, there's not a whole lot more you could want in a music package.

MasterPiece ($475), a professional sequencing program, features dual MIDI port capabilities, 32 tracks and 24 sequencing. Its functions include Count Off, Loop Flag, Clock Select, Sequence and Track Display, Metronome, Meter Selection, Tempo Selection/Record Tempo Changes and System Exclusive Record Capability.

Sonus' multi-functional MIDI recording studio, GlassTracks ($85), features studio-type controls including fast forward/reverse, live mute/unmute and punch, assignable velocity, channel, and name for each track. You can set the end of each sequence or move it left or right by individual pulses or set amounts, or delete pitch wheel and mod wheel information.

The SuperScore ($425) loads and stores data files from GlassTracks and MasterPiece—and, of course, SuperScore—and prints out elaborate musical scores. SuperScore also serves as a sequencer and editor, fully using pull-down menus. You can use up to 40 polyphonic staves with built-in layouts for solo, duet, trio, quartet, piano, organ, piano vocal and choir. All key signatures and meter signatures (1/2 to 64/64) are displayed, and note values range from whole notes to 128th notes.

Sonus Corp., 21430 Strathern Street, Suite H, Canoga Park, CA 91304. (818) 702-0992. PRESS.
CIRCLE **237** ON READER SERVICE CARD

XEBEC HARD DRIVES

Xebec's 10 and 20Mb **Staris** subsystems are based on its 9710H and 9720H external subsystems—used on the Apple II. Included in the software are format and partition utilities for the configuration of the hard disk, which let the user divide it into four individual partitions, each of which can be accessed as an individual drive. The 10Mb drive sells for $499, and the 20Mb for $799.

Xebec, 3579 Highway 50 East, Carson City, NV 89701. (702) 883-4000. PRESS.
CIRCLE **241** ON READER SERVICE CARD

THREE FROM FIREBIRD

Use the mouse to take your character down the **Golden Path**—through 45 graphics screens featuring lifelike animation. You'll have access to an onscreen lore book, which provides clues in developing the necessary wisdom, and each screen comes with its own (often lethal) obstacles.

Tracker combines artificial intelligence with a huge playfield, high-speed action and outstanding graphics as you control eight Skimmer craft and try to wipe out the renegade Cycloids. No matter how slick your tactics are, however, the Cycloids will *remember your tactics* and prevent you from using the same strategy twice.

Set up your own battle scenarios in terms of local, geographical features, armaments, troops, opposition and other variables in the **Universal Military Simulator** (UMS). Pit a club-wielding Australopithecus against a laser-toting space soldier (Guess who'd win?), or create any historical battle exactly as it occurred (or change any parameter to explore the "what if" possibilities). Several classic historical battles are included on the disk.

$44.95 each. Firebird, P.O. Box 49, Ramsey, NJ 07446. (201) 444-5700. PRESS.
CIRCLE **233** ON READER SERVICE CARD

ST ON TAPE

How to Use the ST is a 75-minute video tape giving instruction for not only the ST itself, but also the software that comes with it: the GEM desktop, 1ST Word and NEOchrome. From unpacking the boxes and identifying and assembling the components to mastering 1ST Word and NEOchrome, the video takes you by the hand, covering the areas missed by the ST Get-Aquainted pamphlet.

$29.95. Legacy A.V. Productions, 2 Winder Court, Rockville, MD 20850. (301) 340-1922. PRESS.
CIRCLE **239** ON READER SERVICE CARD

ABACUS STUFF

DEGAS-compatible **PaintPro Library #1** ($29.95) adds even more features and flexibility to Abacus Software's PaintPro with five GDOS-compatible fonts: Swiss, Computer, Chantal, Mixed and Thames (Old English). PaintPro Library #1 also has hundreds of symbols and borders for use in graphic designs.

With **Chartpak** ($49.95) you can draw charts in any of eight different formats. It's easy to enter, edit, save and recall your data, and you have complete control over scaling, labeling and positioning. Chartpak has statistical routines for average, standard deviation and forecasting, and you can also import clip art from PaintPro.

When you're done with the PaintPro Library #1 and Chartpak, curl up with **Atari ST Disk Drives—Inside and Out** ($24.95), the 14th book in the ST Reference Library series. The new book includes information on files, file structure and data management, and thoroughly discusses floppy, hard and RAMdisks from both a programming and technical perspective.

Abacus Software, 2201 Kalamazoo S.E., P.O. Box 7211, Grand Rapids, MI 49510. (616) 241-5510. PRESS.
CIRCLE **236** ON READER SERVICE CARD

*New ST product notices are compiled from information provided by the products' manufacturers. **Antic** assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time, **Antic** had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.*

ATARI ST

PUBLISHING PARTNER™

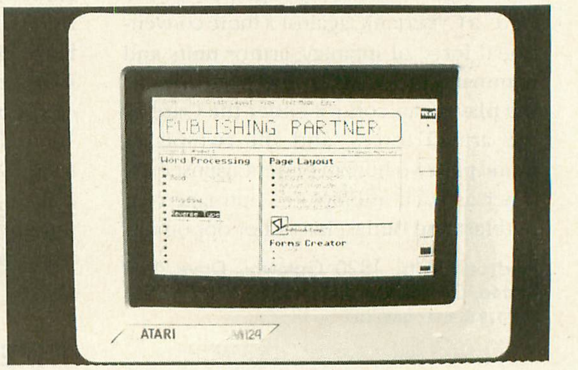
CREATES LIKE A PUBLISHING COMPANY WITHOUT THE OVERHEAD

SOFT LOGIK NEWS

PUBLISHING PARTNER ™ HELPS YOU CREATE!

You'll benefit by using your Atari ST to create professional quality journals, newsletters, ads, business cards, certificates, letterheads, logos,art designs, bar graphs, flow charts, *even bumper stickers* and all the forms you or anyone would ever need. Create just like a professional publishing company without the overhead! Publishing Partner is actually three progams in one--Word Processor, Page Layout, and Forms Creator. Expand your potential in becoming a better writer, artist and designer with your Publishing Partner.

AVAILABLE FOR ONLY $149.95



WORD PROCESSING

What you see is what you get!
Combine text and graphics easily and quickly from existing or newly created documents. Position entire paragraphs or individual words exactly where you want them. Create one, or multiple color separations ready for printing.
Production time will never be the same--it will be much shorter!!
Just take a look at some of its features!

* GEM based
* Justifies right or left as you type
* Edit Multiple Columns on One Screen
* Search and Replace
* User Definable Page Size
* **Bold**, underline, ^{super} and $_{subscript}$
* *Italicize*, shadow, outline
* Reverse Image
* Backslant Characters
* Mirror Image / Mirror Image
* Invert Image / Invert Image
* Auto Headers/Footers, Page Numbers
* Easily Move Text
* Reads & Merges other files together
* Sets Tabs
* Macros
* Vertical & Horizontal Printing

PAGE LAYOUT

Whatever you require--cutting artwork from other programs, custom logos, unique borders, unusual mastheads, digitized photos--Publishing Partner is your solution. After all, it was specially designed for you--the home and/or office Atari ST user--by the pro's who realize that there's more to your computer than just typing letters.

* Vert. and Horz. rules--Exact Alignment
* Auto Text flow for columns/pages
* Layout Multiple Columns of text
* Change columns on finished page
* Display entire page, 50%, or 25%
* Easily Re-position Text and Graphics
* Alternating Headers/Footers
* Mix Type, Fonts, and Sizes *anywhere*
* Adjust Sizes from 2pts to 144 pts (2")
* Adjust line spacing (leading) by points
* Import other program's graphics
* Rotate Graphic Images
* Multiple Patterns, Shades and Colors
* Enlarge & Reduce Graphics/Exact fit
* Cut, Paste & Crop Graphics
* Tool box function/Unlimited patterns
* Boxes, Circles, Arcs, Polygons, etc.
* Insert lines directly on the page
* Adjust Character Spacing
* Use Hairlines to separate columns

FORMS CREATOR

You can create a variety of forms quickly and easily with your Publishing Partner. For example, you can create your own:

Letterhead
Invoices
Purchase Orders
Labels
Bumper Stickers
Business Cards
Certificates
General Ledger
Shipping and Receiving
Routing Slips
"While you were out" Phone messages
Templates
Price Estimate forms
Requistion forms
Shipping Logs and much more!

Publishing Partner supports most dot matrix printers, including the Epson ™ Star ™ and Okidata ™ Printers. Also supported are any Postscript output devices such as the Apple Laserwriter ™ New print drivers are constantly being released, *so please call to make sure your printer is supported.*

FOR MORE INFORMATION OR TO PLACE AN ORDER, CALL (314)894-8608.
DEALER INQUIRES INVITED.

Soft Logik Corp.™

4129 OLD BAUMGARTNER * ST. LOUIS, MO. 63129 * CALL (314) 894-8608

CIRCLE 033 ON READER SERVICE CARD

ALICE–THE PERSONAL PASCAL

First interpreted ST Pascal

Reviewed by David Plotkin

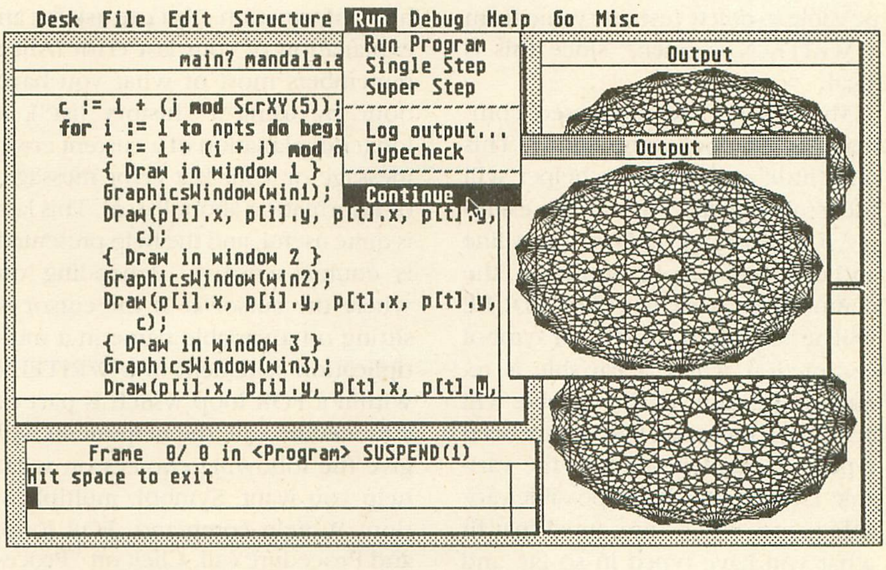
Alice—The Personal Pascal (or just Alice) is the first interpreted Pascal to become available for the Atari ST. It features a syntax-directed editor, compatibility with Borland's Turbo Pascal, extensive help facilities and good GEM support.

THE ALICE EDITOR

The first unusual thing about Alice is the text editor. A "syntax-directed" text editor is, basically, an intelligent helper in your programming efforts. It detects what you're entering from the keyboard and determines if what you've punched in is in the correct syntax. It does this by laying out templates for you to fill in. For example, if you enter the keyword FOR, Alice will respond with:

FOR variable := start to finish do
  begin statement
  end;

By using a variety of keys (primarily the Tab key), you then advance through the underlined words, filling in the necessary information. Alice will not let you change words which must remain untouched, such as "do" or "begin". Further, as you begin to fill in a general line like "statement", Alice will help you with the syntax, laying out a template for PROCEDURE calls, WRITELN, or anything else you decide to put there. You can, of course, add additional "statements", or change your mind, delete the information you have typed previously and start again. Alice will even help you within statements. For example, if you type WRITELN, Alice will respond with: writeln(Value). After you fill in "value", you can type a comma or arithmetic operator (+,-,DIV, etc.) and Alice will continue



with (for example): writeln(xvar DIV Value).

The amount of help Alice's syntax-directed editor will give you is impressive. Type in a Procedure call, and Alice will lay out the template, even including the variables based on your earlier Procedure definition. Use a variable you have not yet declared or call a Procedure you have not yet defined, and Alice will warn you. Then, all you need to do is type in "var" and the editor will return you to the variable declaration section of the program to add a declaration. It even indents your listing automatically, making it easier to read. You can hide whole blocks of code (leaving only a comment behind) so that your program listings don't get too busy. This is especially useful when including long libraries (provided on the disk) in your program.

You have no less than three different ways to enter commands. The first, and simplest, is to use the drop-down menus. Alice is totally GEM-driven. Once you get to know the

continued on next page

program better, you can use the function keys so you don't have to go looking for the mouse. Finally, you can invoke a "command line," the most efficient way to use commands requiring additional data (such as the name of the file to load). You can put the additional data on the command line, which prevents you from having to deal with choices in dialog and alert boxes before the command can be executed. The commands range from adding and deleting statements and blocks of code to working with more than one file at a time, getting help, setting marks (to find your way to a particular portion of code), editing and debugging.

The editing commands also help prevent you from making syntax errors. For example, to delete a block of code, you must highlight it first. It is impossible to highlight anything other than a complete block. For example, if you highlight the name of a Procedure, the *entire* Procedure will be highlighted. Obviously, the Procedure makes no sense without a name, so the whole thing will be deleted if you proceed. On the other hand, it is quite possible to delete just one value from a WRITELN statment, since this is legal.

My favorite and most-used command is "symbol completion." This nifty little programmer's helper will fill in missing data for you. For example, if you just type PRO on a new line and call for symbol completion, the complete template for a PROCEDURE will be laid out. If you ask for symbol completion where a variable is required, the name of the variable will be filled in if enough letters have been typed to uniquely identify the variable. Otherwise, a list of possible variable names will be presented that fit what you have typed in so far, and with the mouse, you can just choose the one you want. This is great if you can't remember the exact spelling of a variable or are too lazy to type out the whole variable name. "Symbol completion" is available anywhere, including for TYPE names.

Of most interest to beginners is Alice's "Dynamic Help Facility." There's so much information available here I doubt you would need to go to a Pascal manual ever again. There are basically three parts to the help facility. First is general help. This is a series of screens with general information about Alice. Most of this can be found in the manual, and I rarely used it.

The second part is more specific help information. You can ask for an explanation of your last error (Alice remembers most of what you have done by using a "history list"), a longer explanation of a current error message or your last error message, or information about Pascal. This last is quite useful, and the help presented is context-sensitive, depending on where the cursor is. If the cursor is sitting on a variable name in a multiplication statement in a WRITELN within a FOR loop which is part of a Procedure call, the help menu will give the following choices on what help you want: Symbol, multiplication, Writeln command, FOR loop, and Procedure call. Click on "Procedure call" and the help screen that comes up will tell you all about Procedures. Because the menus of your available choices for help are constantly changing, depending on where you are in the program, this is called the "Dynamic Help Facility".

**Alice—
The Personal Pascal
is an excellent
implementation of
(in my opinion) the best
structured language
ever developed.
It is ideally
suited to beginners.**

The last part of the help facility is "What can I type." This presents you with all the legal choices to enter at the current cursor location. For example, if you ask for this help when the cursor is on Statement, the list will include such words as FOR, IF, WHILE, and others. You may choose one by clicking on it with the mouse.

The syntax-directed editor will not be for everyone. The experienced Pascal programmer may find the limitations of the editor chafing. You can't simply sit down and enter text the way you would with, say, OSS Personal Pascal. But for the majority of us who are just learning Pascal or are not completely comfortable with it, this editor is a big help.

RUNNING YOUR PROGRAM

Once you've entered your program, the next big step is to try and run/debug it. Alice makes this much simpler than a normal compiled Pascal. With a compiled Pascal, you must compile and link the program, run it, and attempt to figure what might've gone wrong. Not only is this a time-consuming process, but you can't stop and ask for the current value of different variables the way you would with BASIC. Also, the problem is caused frequently by syntax. Alice will change all that. The syntax problem is largely taken care of by the editor.

Beyond that, though, Alice is an interpreter, just like most of the BASICs you're used to. Thus, you can run the program immediately (no compile or link), break into it in the middle or set breakpoints in the code for the program to stop executing. You can even single-step through your program, executing one statement at a time and watching for problems. At any time where execution has been halted, you can input what are called "Immediate Blocks." These blocks are ignored during a normal run, but by positioning the cursor on a line within an Immediate Block, you can execute just that one line while the program is paused. Thus, if you are not getting the value of X you thought you would, just set up an immediate block with the command WRITELN(X). When executed, this line will print out the value of X in the output

window!

You can use just about any program lines in the immediate block that you can in the main program, including Procedures, loops, decisions, etc. The only limitation is that since variables in the program are undefined except *while the program is running,* you must ask for this information by forcing the program to stop executing in the middle. You can't ask for the values of variables after the program is finished, for they are once again undefined. You can even use the Immediate block to change the value of a variable in the middle of a run.

The single-step way of running your program is very useful for debugging. Each time you single-step, one line of your program is executed. Of course, this can be quite time-consuming, especially if you have a loop which sets 1000 elements of an array to zero. To get through this loop, you would need to single-step 1000 times! To avoid this problem, there is the "super step." Once you have ascertained that a particular block of code is not the problem, you can use the "Super step" command, which executes a whole block (a loop, for example) of code at once. This would take care of the problem above very nicely. Or, you could set the program to stop executing at a certain point (set a breakpoint) and single-step or superstep from that point on. Debugging is considerably easier with this package.

ALICE—THE LANGUAGE

Alice seems to include all of what can be termed "standard" Pascal as defined by ISO. It also has quite a few extensions, both to allow for compatibility with Borland's Turbo Pascal, and "Watcom" (University of Waterloo, Ontario) Pascal. The string TYPE, as well as string operators for concatenating, finding, inserting and deleting strings are all present. Additional file handling commands are also included.

Another extension is that Alice supports no less than five graphics coordinate systems. Some of these will not be of interest to ST owners, since they are only there to provide compatibility with Turbo. But there are some very powerful systems, such as several versions of scaled coordinates. These provide coordinates which are independent of screen resolution or window size, and which can automatically scale your graphics to the window. The bulk of the extensions are for support of the ST's GEM operating enviroment. This GEM support is quite good, although not as complete as some other languages. There are some commands for VDI graphics, such as setting fill patterns, sprites, shapes (ellipses, rectangles, etc.), plotting points and drawing lines, setting colors and text attributes, and handling the mouse. Many of the VDI graphics calls are missing, however. The publishers of Alice did not give them special commands because they say that many people won't use them, so why build them into the language? Instead, there is a library on the disk for a long list of VDI graphics calls, which you can include in your program. This does work, although, of course, you have to merge the library with your own program and declare the variables.

> **With a compiled Pascal, you must compile and link the program, run it, and attempt to figure what might've gone wrong. Alice will change all that.**

AES support is quite complete. Alice provides ways to build and use menus and alert boxes, as well as specify windows with all the attributes (title, sliders, close box, etc.) you need. Further, getting messages returned by GEM is made quite simple with the GETEVENT call and the EVENTPARAMETER function which holds the messages. The only problem with GETEVENT is that you can't specify which events you want to wait for. You must check the event after GETEVENT returns and see if it is the one you want to deal with. Information about the screen and current resolution is available in Procedure SCRXY. There is even a one-line dialog box, although currently there is no way to build your own dialog boxes with buttons, etc. or even to import one built with an RCS. Looking Glass says they are working on a library of procedures to do these. The AES support is unusual in how much Alice does for you. Normally, when a program receives a message from GEM that you want to move a window or slider, or redraw a window, the application must go into a loop and perform all of these housekeeping functions. *Alice does this for you.* If you click on the "move" bar and move a window, Alice will relocate the window, redraw it, and redraw any window under it. Alice will even take care of resizing if the user wants a window resized, removing much of the programming burden (and of understanding GEM) from the user.

THE ALICE MANUALS

The Alice manuals are good, although they could be better. I should point out that, as with most Pascal languages, the manuals assume you know Pascal, at least in its "standard" form. There are two manuals with Alice. The first is a tutorial, which introduces the syntax-directed editor. Work through the tutorial first, since it introduces many important concepts. The other manual is a reference book. The first part is pretty good, detailing additional information about the editor and its many commands, but it bogs down when it reaches the section about extensions and enhancements. The main problem is that it talks about the ways in which its extensions are different from either standard Pascal or Borland Turbo. At this point, though, you have no idea what the extensions

continued on next page

do, since they're not introduced until the next section! Also, if you don't know Turbo, the sections on Turbo differences are tough going.

The section on programming with GEM is quite good, explaining about windows, menus and messages, with some code samples for you to look at. While it may not make you a GEM expert, there is enough information to get you going.

The real gripe I have with the manual is the alphabetical listing of extensions. Why do manual writers love alphabetical listings? The explanations of the extensions are decent, but related commands are spread out all through the section (depending on what letter they start with), so you have to to an inordinate amount of flipping back and forth. All the menu-related commands should be together, and all the window commands and message commands, too. The commands should also be listed in the approximate order they would normally be called in. A fne example of good GEM documentation is the OSS Personal Pascal manual.

ODDS AND ENDS

Currently, someone must own a copy of Alice if they want to run a program you have written. Looking Glass says they are working on a runtime package, which you can give out freely. They're also considering plans for a compiler, which would produce a .PRG file. The editor has an option for a compiler, but one is not yet available. A compiled program would also run much faster.

Also available is Alice Educator, a textbook for learning Pascal. Since it is designed for use with Alice, the different extensions (except for GEM) are also explained. This is one of the better Pascal texts I have seen, and well worth your money if you are serious about learning Pascal.

CONCLUSION

Alice—The Personal Pascal is an excellent implementation of (in my opinion) the best structured language ever developed. Because of the syntax-directed editor and Interpreter, it is ideally suited to beginners, although its power is sufficient for all uses where it makes sense to use Pascal. The Alice Educator is another plus for beginners, as is Alice taking over most of the hard work when it comes to GEM. The ease with which programs from the IBM PC written in Borland Turbo Pascal can be ported by using Alice cannot be ignored. It is not for everybody, though. It cannot currently be used for commercial development due to the lack of runtime package and/or compiler. It also lacks some of the more straightfoward GEM support present in OSS's Personal Pascal. But it is an excellent value, and if you want to learn Pascal, this package is definitely worth considering.

Alice—The Personal Pascal
Looking Glass Software
124 King St.
N. Waterloo, Ontario, Canada
N2J2X8
(519) 884-7473
$79.95
CIRCLE 226 ON READER SERVICE CARD

GFA BASIC

At last, the BASIC you've been waiting for

Review by David Plotkin

GFA BASIC is a powerful and extremely fast structured language recently brought to the U.S. from Germany. It includes a good editor, a run-time package, and quite a bit of GEM support. It has a surprisingly small number of bugs, but the current manual is poor, although MichTron is rectifying this. At the moment, however, GFA BASIC is well worth a look, so let's examine its features more closely.

USING GFA BASIC

Upon first booting GFA BASIC, you are in a full-featured text editor. Instead of drop-down menus, the screen features a double line of commands at the top. You may point to, and activate, these commands with the mouse. Most of the commands also have keyboard equivalents, so you need not use the mouse if you don't want to. These commands include such useful items as LOAD, SAVE, FIND, REPLACE, Block Operations (Copy, Move, Print, Save, Hide and Delete), LLIST (printed listing), FLIP (to output screen), DIRECT (immediate mode, where commands are executed immediately), TEST (checks loop construction) and RUN. A full range of cursor movement commands are also available through various keystroke combinations. These commands make navigating through the text editor quite simple. The full screen is available for text entry.

GFA BASIC does not use line numbers. Instead, references to a specific place in the program, such as for GOTO or RESTORE, is by label. Each line of text is checked for syntax as it is entered. If there are no syntax errors, the line is accepted, and all commands are automatically capitalized. Any commands which were entered in their abbreviated form are also written out at this point. Lines of text may be up to 255 characters in length, although only one command may be on each line. Lines of text which fall within loops (DO/LOOP, WHILE, IF/THEN or REPEAT/UNTIL) or PROCEDUREs are indented to make identifying the loops and PROCEDUREs easier. The TEST command will check to make sure that loops are properly set up.

GFA BASIC maintains two independent screens. The first is the text screen mentioned above. The other is the output screen where all your program output is displayed. You may manually FLIP between the screens if you wish. The DIRECT command returns you to the output screen with a cursor for your input. The RUN command also automatically flips to the output screen. This two-screen system solves the dilemma of edit and output windows rather nicely. The people who are rewriting ST BASIC should examine this latter GFA feature closely.

FEATURES OF GFA BASIC

The language includes all "normal" features you would expect from BASIC, as well as some more advanced commands. The DO/LOOP construction executes a series of commands until the EXIT IF condition is satisfied. There are also REPEAT/UNTIL and WHILE/WEND loops. The TIMER command allows access to the system timer, which measures the time since the system was turned on in increments of 1/200 of a second. TIME$ and DATE$ allow reading and setting the time and date. It provides full file access for both sequential and random access, and you can directly address system peripherals and ports. You may define your own one-line functions using the DEFFN command. Also supported are PRINT USING for formatted output of numbers and strings, and PRINT AT for locating output on the screen. GFA BASIC also includes commands for sound, manipulation of files and directories (Folders), Trace debugging, and some math functions (such as ADD) which are much faster than the (also supported) operators +,-, etc. The EXEC command loads and executes machine code programs. Memory can be protected for use with this command. You can even use C-type pointers to indirectly access variables.

As I mentioned earlier, GFA BASIC is a structured language. It supports PROCEDUREs, which are similar to

continued on next page

subroutines and are called using the GOSUB command. However, you can pass variables to the PROCEDURE, and also make use of LOCAL variables. Thus, a variable declared LOCAL to the PROCEDURE may have the same name as a variable in the main program, but altering the value of one does not affect the other. Variables passed to a PROCEDURE are automatically LOCAL, and, unlike Pascal, there is no way to pass an altered value of a LOCAL variable back to the main program except by using indirect access. All PROCEDUREs must be located at the end of the main program, although their order doesn't matter. PROCEDUREs can call other PROCEDUREs (even those ahead of them in the listing) and can even call themselves (recursion).

GFA BASIC does a pretty good job of supporting GEM. Keywords include a variety of shapes such as ellipses, rectangles, lines and markers. There are even commands for polygons. You can easily define colors, marker shapes, line types and fills, including user-defined patterns. The TEXT command allows you to put text on the screen using any of the specified attributes, such as underlined, italics or outlined. You can also specify text size and orientation of the letters.

The position of the mouse and status of the mouse buttons is available. You can change the shape of the mouse to one of the predefined shapes or use one of your own design. Included on the GFA disk is a program to help design your own mouse shape, and you can also hide or show the mouse cursor.

In addition, you can build your own menus and install them. There is a command to add or delete checkmarks or disable and enable menu items. Commands are also provided to detect what menu item has been selected, when the mouse has entered or left one of two definable rectangles, when a keyboard key has been pressed, when a mouse button has been clicked, and when a message has been received from GEM. These messages are typically related to windows, and occur when the user clicks on the "close box" or a slider, for example. These messages are accessible to you in a message buffer. While powerful, many people will not be able to implement these commands in their own programs because the current documentation doesn't give enough information on how to do so.

GFA BASIC does support windows, allowing to open and close them, full them, clear them, and set the title and information line. The windowing is a little strange, however. You are allowed to open up to four windows, with each window in a different quadrant of the screen. For example, window 2 is in the upper right corner. Specifying x and y when you open window 2 will set the LOWER LEFT corner (and thus the window size); the upper right corner of the window always coincides with the upper right corner of the screen. Window 3, on the other hand, is in the lower left portion of the screen. For window 3, x and y specify the UPPER RIGHT corner of the window. This is confusing. A table of information about the windows (coordinates, attributes, etc.) is available, although once again poor documentation makes it difficult to use.

GFA does a good job of bit-blitting (moving blocks of bits around the screen, usually for animation), with both built-in commands and GEM's Bitblt. Functions for saving areas of memory to disk and moving memory around fast are provided, and alert boxes are also easy to use.

Beyond the directly-supported commands, GFA BASIC allows you to access VDI and AES by numerical calls, just like ST BASIC. However, all the system variables required, such as GINTOUT, ADDRIN, INTIN and the rest are already predefined to make your job a little easier. You may gain access to XBIOS and BIOS calls in a similar manner.

DOCUMENTATION AND SUPPORT

My review copy of GFA BASIC included an early copy of the manual. It was laced with typographical errors, and certain sections were translated from the original German in an incomprehensible manner. In certain cases the language was also much too technical (folders were referred to as "hierarchical file system"). The organization of the manual left a lot to be desired, since basic information such as variable types was left to the appendices at the end, while other subjects, like arrays, were never mentioned at all.

Phone support from MichTron is quite good, considering how new this product is. At this writing, support is still in the "check it and get back to you" stage, but that will have changed by the time you read this. I did run across a few minor bugs—for example, the PRINT USING command does not work properly in exponential (scientific) notation. This should be corrected.

CONCLUSION

GFA BASIC is a powerful language. With a good manual, it would also be easy to use. The number of commands and GEM support is not as extensive as FAST ST BASIC from Computer Concepts (see my review, in last issue's ST Resource), but it is also not as crash-prone, and MichTron's support and the availability of a run-time package are admirable. MichTron also says a compiler to produce stand-alone applications should be available before you read this. With the new, rewritten manual, this should be a good language for most ST owners who need only the built-in commands. As with ST BASIC, though, the extra GEM support available only "by the numbers" is best left to experienced programmers—unless you're feeling adventurous.

GFA BASIC
MichTron
576 South Telegraph
Pontiac, MI 48053
(313) 334-5700
Disk $79.95
CIRCLE 228 ON READER SERVICE CARD

MICROTYME

A DIVISION OF MICRO PERIPHERALS, INC.
P.O. BOX 369 • KETTERING, OHIO 45409

ATARI® VISA MasterCard

HARDWARE/ACCESSORIES

ATARI

- **ST's Color or Mono** . . . CALL
- ST Monitor Cables . . . CALL
- SF 314 Double Sided Drive . . . CALL
- Supra 20, 30, 60 Meg Hard Disks . . . CALL
- SH 204 20 Megabyte Hard Disk . . . CALL
- SC 1224 RGB Color Monitor . . . CALL
- 130 XE . . . CALL
- 65 XE . . . CALL
- 1050 Disk Drive . . . CALL
- 1020 Color Printer/Plotter . . . 27
- Astra "The One" . . . 284
- 7800 Pro System & Software . . . CALL
- Power Supply 400/800/810 1050/850 . . . 15
- Power Supply 600/800 XL, 130 XE . . . 26
- Power Supply for Indus GT . . . 15

PANASONIC

- KX-P1080*i*, 120 cps . . . CALL
- KX-P1091*i*, 160 cps . . . CALL
- KX-P1092*i*, 240 cps . . . CALL
- KX-P1592 136 col, True 180 cps . . . 549
- KX-P3131 L.Q. Daisy, 80 col . . . 279
- KX-P3151 L.Q. Daisy, 136 col . . . 429
- KX-P110 Ribbon, Blk . . . 9
- **COLOR RIBBONS** . . . 11

CITIZEN

- MSP-10 . . . CALL
- MSP-15 . . . CALL

STAR MICRONICS

- NX-10 (80 col) . . . CALL
- NP-10 . . . NEW MODEL . . . 179
- NL-10 . . . CALL
- NX-15 (135 col) . . . 429
- STAR SG-10 Ribbons . . . 4
- Ribbons NL or NX . . . CALL

MODEMS

- SX-212 . . . CALL
- **XM-301** Direct Connect . . . CALL
- HAYES 1200 Smartmodem . . . 399
- US ROBOTICS COURIER 2400-100% Hayes! 429
- HABA 1200 (Hayes Compatible) . . . 119
- VOLKSMODEM VM 520 (Hayes Compat) . . . 139
- AVATEX 1200 bps . . . **Special** . . . 89
- AVATEX 1200 H.C. (Hayes Compatible) . . . 129

INTERFACES/BUFFERS

- ATARI 850 . . . In Stock! . . . 119
- P:R: CONNECTION (100% 850 compatible) . . . 69
- CABLES - We've Got 'Em . . . CALL
- XETEC GRAPHIX AT . . . 39
- SUPRA/MPP MICROPRINT . . . 39
- SPECIAL SUPRA MICROSTUFFER (64K) . . . 59
- SUPRA/MPP 1150 . . . CALL

MIDI HEADQUARTERS

- CZ's . . . CALL
- Cables . . . CALL
- Hybrid Arts Software . . . CALL
- Other MIDI Software . . . CALL

MONITORS

- TEKNIKA MJ-22 RGB and Composite . . . 289
- NAP Green W/Audio . . . 85
- NAP Amber W/Audio . . . 90
- NAP Composite Color . . . CALL
- NAP, RGB and Composite . . . CALL
- SANYO Composite . . . 189

EPSON

- LX-86 (80 col) . . . CALL
- FX-85 (80 col) . . . CALL
- FX-286 200 cps (135 col) . . . CALL
- Tractors . . . CALL

ACCESSORIES

- ST - COVERS, Heavy Grade Vinyl . . . 8
- ST - MOUSE MAT . . . 10
- ST - 6' Printer Cable . . . 19
- ST - Modem Cable (to Hayes, etc.) . . . 17
- ST - Monitor Stand, Swivel & Tilt . . . 15
- ST Clock Internal or Plug-In . . . ea 41
- Disk File for 3.5" disks (holds 40) . . . 9
- Flip N File DATA CASE (holds 50) 5¼ . . . 8
- Disk File, with Lock (holds 100!) 5¼ . . . 13
- Power Strip, 6 outlet, (15 amp Surge) . . . 15
- Deluxe Power Strip w/Spike & Surge . . . 24
- Printer Stand, Heavy Duty, Sloping . . . 13
- ATARI "Standard" Joystick . . . 7
- Epyx 500XJ Joystick . . . 15
- WICO Bat Handle Stick . . . 17
- Competition Pro 5000X Stick . . . 18
- 6' Atari Serial I/O Cable . . . 7
- Book of Adventure Games I or II . . . 15
- Disk Notcher . . . 5
- Compuserve Starter Kit . . . 24
- U.S. DOUBLER (Dbl. Density for 1050) . . . 49
- U.S. DOUBLER without Sparta DOS . . . 29
- "Duplicator" for 1050 Disk Drive . . . 125

PRINTER SUPPLIES

- **MAILING LABELS**, White, 500 pack . . . 3
  - per 1000 . . . 4
  - Blu, Pnk, Gn, Yel, 800 pack (200 ea) . . . 9
  - per 500, any 1 color . . . 5
  - per 1000, any 1 color . . . 7
- Big Labels, 1-7/16x4", White, per 500 . . . 5
- **PRINTER PAPER**, Micro-Fine perfs, 20 lb.
  - 500 sheets, Pure White Bond . . . 8
  - 1000 sheets, same as above . . . 14
- **PRINTSHOP "Rainbow" Color Paper Packs**
  - Pastels (5 colors), 50 sheets of ea . . . 12
  - Matching Envelopes, 20 of each . . . 6
  - Brights (8 colors), 50 sheets of ea . . . 29
  - Matching Envelopes, 20 of each . . . 10
  - ALL 13 colors, 50 sheets of each . . . 39
  - Matching Envelopes, 20 of each . . . 14

SOFTWARE

We can't list it all. . .call if you don't see it!

8-BIT SOFTWARE

ATARI

- Atariwriter Plus . . . 35
- Proofreader . . . 12
- Silent Butler . . . 18
- Learning Phone . . . 15
- Star Raiders II . . . 13
- OTHERS . . . CALL

ACCESS

- Triple Pack . . . 14
- Leader Board . . . 26
- Tournament Disks . . . 14

ACCOLADE

- Hardball . . . 20
- Fight Night . . . 20

BATTERIES INCLUDED

- Paperclip w/Spellpak . . . 39
- Homepak . . . 15
- B-GRAPH . . . 27

ARTWORKX

- Strip Poker . . . 19
- S.P. Data Disks each . . . 13

BRODERBUND

- Championship Loderunner . . . 18
- Karateka . . . 18
- Loderunner . . . 23
- Print Shop . . . 28
- Print Shop Companion . . . 24
- Graphics Library 1,2, or 3 . . . ea 16

DATASOFT

- Alternate Reality . . . 27
- Never Ending Story . . . 21

ELECTRONIC ARTS

- Racing Destruction Set . . . 12
- Super Boulderdash . . . 12
- Touchdown Football . . . 12
- Ultima IV . . . 43
- Many Other Titles . . . **CALL** . . . 12

EPYX

- World Karate Championship . . . 19

INFOCOM

- Hitchhiker's Guide . . . 23
- Leather Goddesses . . . 22
- All Others . . . CALL

O.S.S.

- Action . . . 46
- Basic XL . . . 36
- MAC/65 . . . 46
- Tool Kits for above . . . ea 19
- Basic XE . . . 46

SSI

- Mech Brigade . . . 38
- War Game Const. Set . . . 19
- NAM . . . 25
- USAAF . . . 36
- Phantasie . . . 25
- Wizard's Crown . . . 26
- OTHERS . . . CALL

SUBLOGIC

- Flight Simulator II . . . 37
- Scenery Disks . . . ea 15
- Western Scenery Set . . . 74

SYNAPSE

- SYN CALC . . . 31
- SYN CALC TEMPLATES . . . 13
- SYN FILE + . . . 31

XLENT

- Typesetter . . . 22
- Rubber Stamp . . . 20
- Page Designer . . . 20
- Megafont II . . . 16
- P.S. Interface . . . 19
- Word Processor . . . 20

ST SOFTWARE

ATARI

- 1st Word Plus . . . NEW . . . 32
- Microsoft Write . . . 59
- Battlezone . . . 19
- Crystal Castles . . . 19
- Joust . . . 19
- Star Raiders . . . 19

ABACUS

- Text Pro . . . 33
- Datatrieve . . . 33
- Power Plan . . . 52
- PC Board Designer . . . CALL

ACCESS

- Leader Board . . . 26
- Tournament Disks . . . ea 14

ACCOLADE

- Mean 18 . . . 33
- Hardball . . . CALL

ACTIVISION

- Hacker II . . . 33
- Little Computer People . . . 31
- Shanghai . . . 29
- Tass Times . . . 32

ANTIC

- A-CALC PRIME . . . 59
- CAD-3D . . . 36
- CAD-3D **STEREO** . . . 65
- STEREOTEK 3-D Pkg. . . . 125
- Flash . . . 29
- Expert Opinion . . . 72
- Others . . . CALL

ARTWORX

- Strip Poker . . . 26
- Bridge 4.0 . . . 20
- Peggammon . . . 12

BATTERIES INCLUDED

- B-Graph Elite . . . CALL
- D.E.G.A.S. Elite . . . 49
- Paperclip Elite . . . CALL
- Thunder . . . 26
- Time Link . . . 32

ELECTRONIC ARTS

- Arctic Fox . . . 27
- Auto Duel . . . 32
- Marble Madness . . . CALL
- Sky Fox . . . 29
- Chessmaster 2000 . . . 31
- Ultima III . . . 39
- Ultima IV . . . 39

EPYX

- Summer Games . . . 26
- Winter Games . . . 26
- Super Cycle . . . 26
- Championship Wrestling . . . 26
- World Games . . . 26
- Rogue . . . 26
- Trilogy . . . 26

INFOCOM

- All Titles . . . CALL

MICHTRON

- Cornerman . . . 32
- DOS Shell . . . 32
- M-Disk . . . 26
- Mighty Mail . . . 32
- Personal Money Manager . . . 32
- Pinball Factory . . . 25
- Utilities . . . 39
- Time Bandits . . . 26
- Trim Base . . . 64
- Major Motion . . . 26

FIREBIRD

- Guild of Thieves . . . 29
- Starglider . . . 29
- The Pawn . . . 29

REGENT

- Regent Base . . . 67
- Regent Word II . . . 67

SIERRA-ON-LINE

- ST ONE WRITE . . . 39
- Donald Duck's Playground . . . 19
- Ultima II . . . 39
- Kings Quest I, II or III . . . ea 33
- Space Quest . . . 33

TIMEWORKS

- Data Manager ST . . . 52
- Swift Calc ST . . . 52
- Word Writer ST . . . 52

UNICORN

- Math Wizard . . . 26
- Fraction Action . . . 26
- Decimal Dungeon . . . 26
- Read & Rhyme . . . 26

UNISON WORLD

- Print Master Plus . . . 26
- Art Gallery I, II or III . . . ea 19

ST LANGUAGES

- MODULA 2 . . . 54
- MOD 2 Developer's Kit . . . 99
- MARK WILLIAMS C . . . 119
- LATTICE C . . . 109
- GST-ASM . . . 45
- ASSEM PRO . . . 39
- GFA Basic . . . 52

DISKETTES

Prices Are Per Box/Pack of 10

5¼"	GENERIC		SONY	MAXELL	BONUS		WABASH	3½	SONY		MAXELL	VERBATIM
	SS/DD	DS/DD	SS/DD	DS/DD	SS/DD	DS/DD	SS/DD		SS/DD	DS/DD	SS/DD	SS/DD
2-5	6.95	7.95	9.50	11.95	8.95	10.95	8.50	2-5	15.00	24.00	15.00	15.00
6-10	5.95	6.95	8.50	10.95	7.95	9.95	7.50	6-10	14.00	22.00	14.00	14.00

Rainbow Colored Centech Disks (2 ea. of 10 colors per pkg) . . . 17

"Silver" Centech Disks (20 Pack) . . . 17

TO ORDER, CALL TOLL FREE 1-800-255-5835

M-F 9am - 9pm • EST • SAT 10am - 4pm
Ohio Residents, Order Status or Tech, Info Call (513) 294-6236

TERMS AND CONDITIONS

• NO EXTRA CHARGES FOR CREDIT CARDS! • We do not bill until we ship • Minimum order $20 • C.O.D. to continental U.S. only, add $3 • Ohio residents add 6% sales tax • Please allow 3 weeks for personal or company checks to clear • Shipping/Handling: (Call for Quote). Hardware, minimum $4; Software and most accessories, minimum $3 • Overnight shipment available at extra charge • We ship to Alaska, Hawaii, Puerto Rico (UPS Blue Label Only), APO, and FPO • Canadian orders, actual shipping plus 5%, minimum $5 • All defective products require a return authorization number to be accepted for repair or replacement • No free trials or credit • Returns subject to 15% re-stocking charge • Due to changing market conditions, call toll free for latest price and availability of product. FOR YOUR PROTECTION, WE CHECK ALL CREDIT CARD ORDERS FOR FRAUD.

CIRCLE **031** ON READER SERVICE CARD

PRACTICAL PROGRAM ★★ CONTEST ★★

First Prize Atari 1040ST Computer (Provided by Michtron)

Plus $500 worth of Batteries Included ST software

Three Runner-Up Prizes; Antic 1-Year Disk Subscriptions

Also, any entries (including prizewinners) accepted by **Antic** Magazine will be paid at our standard authors' rate, upon publication.

HOW TO WIN We are looking for the most powerful, versatile, easy-to-operate programs that perform useful jobs in the real world. The more uses for your software, the better. For example, a stuffed-animal database for taxidermists would probably be considered too specialized by the magazine's judges—no matter how excellently it is programmed.

The winning software must be user-friendly, most likely menu-driven wherever possible. Users should not need programming knowledge in order to successfully operate the application programs.

Please note that some of the other popular Atari program categories—such as utility routines that add power when inserted into your own programs—cannot properly be considered applications. Practical application programs should be complete, stand-alone software that does an entire user-controlled job from start to finish. For example, a drawing or painting program would be a practical application—a colorful graphics demo would not!

TECHNICAL RULES Programs must run on the Atari 800, 800XL and 65XE models and require no more than 48K memory. However, programs that *also* take advantage of the extra memory in the 130XE will be given preference.

Programs must be written in standard renumberable Atari BASIC or MAC/65 assembly language, under a disk operating system compatible with Atari DOS 2 or 2.5. Program listings cannot be larger than 150 sectors of a single-density disk.

Thorough error-trapping is very important. Your program should not crash every time a user accidentally presses the wrong key. And please do not include authors' copyright statements in your listing.

JUNE 15, 1987 All entries in the **Antic** 8-Bit Practical Applications Competition must be received by June 15, 1987. Winners will be announced in the November, 1987 issue of **Antic**. Judges' decisions are final.

Entries—programs and accompanying articles—should be submitted on disk *and* in printout. Entries will be returned only if the author provides a stamped, self-addressed envelope.

Send entries to:
Practical Applications Competition
Antic Magazine
544 Second Street
San Francisco, CA 94107

All 8-bit practical application programs accepted for publication by **Antic** between November 1, 1986 and June 15, 1987 will also be automatically evaluated as potential prizewinners in the contest.

SOFTWARE LIBRARY

Antic type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

► ***LOOK THROUGH BASIC STATUS WINDOWS***

PAGE 6: THE INFORMER 85

► ***ATARI "TALKS" TO YOUR ROBOT***

VERBOT COMMANDER 87

► ***LESSON 1: CHARACTER GRAPHICS***

ATARI ANIMATION 88

► ***PRACTICE YOUR STROKE WHILE YOUR ATARI CRUNCHES NUMBERS***

GOLF HANDICAP CALCULATOR 89

► ***CITADEL***

GAME OF THE MONTH 90

► ***STING RAYER***

BONUS GAME 91

► ***MIGHTY MAIL-MERGING***

LOGO MAILING LIST 92

ST RESOURCE

STARTING OUT PROGRAMMING IN GEM

A LITTLE GEM 93

TYPING SPECIAL ATARI CHARACTERS 84

HOW TO USE TYPO II 85

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

DOS COMPATIBILITY: All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—*not* with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		ESC CTRL =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	Λ CTRL ,		CTRL X
	Λ CTRL A		CTRL Y
	Λ CTRL B		CTRL Z
	Λ CTRL C		ESC SHIFT DELETE
	Λ CTRL D		ESC SHIFT INSERT
	Λ CTRL E		ESC CTRL TAB
	Λ CTRL F		ESC SHIFT TAB
	Λ CTRL G		Λ CTRL .
	Λ CTRL H		Λ CTRL ;
	Λ CTRL I		Λ SHIFT =
	Λ CTRL J		ESC CTRL 2
	Λ CTRL K		ESC CTRL DELETE
	Λ CTRL L		ESC CTRL INSERT
	Λ CTRL M		
	Λ CTRL N		
	Λ CTRL O		
	Λ CTRL P		
	Λ CTRL Q		
	Λ CTRL R		
	Λ CTRL S		
	Λ CTRL T		
	Λ CTRL U		
	Λ CTRL V		
	Λ CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key. Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key Λ instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL			STANDARD		
		CTRL F	/		/
		CTRL G	\		SHIFT | +
		CTRL N	_		SHIFT −
		CTRL R	-		−
		CTRL S	+		+

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II "

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

look through BASIC status windows

PAGE 6: THE INFORMER

Article on page 24

LISTING 1

Don't type the TYPO II Codes!

```
WW 10 REM THE INFORMER
QA 20 REM BY MATT LOVELESS & MIKE EGGERS
OH 30 REM (c)1987, ANTIC PUBLISHING, INC.

CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
PG 70 FN$="D:INFORMER.EXE":REM THIS IS TH
   E NAME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "◙TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "◙TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
KQ 1000 DATA 259
PO 1010 DATA 2552550000006246006169000133
   0216900613300316500900900213300916900
   4044031208208001096162006160
OI 1020 DATA 0311690070760922281730490022
   0100624002717304800202410500314119200
   6173049002105000141193006169
GA 1030 DATA 1851410480021690061410490021
   6508416002203215900616508516002803215
   9006173190002024042042042170
DR 1040 DATA 1891940060131820020731281412
   2400605617322900222914416817323000222
   9145162000072074074074074032
QZ 1050 DATA 1450061572420062321040410150
   321450061572420062322240042400041520
   76
```

continued on next page

```
   112006076098228201010144004
WA 1060 DATA 024105151096009144096076142O
   061620042211970061760032022082480562 53
   1970060091441532080061892O2
GM 1070 DATA 006153207006096112096016O662
   070060010000000970330640000100200300 40
   144145146147148128169238230
DB 1080 DATA 239242237229242128214173239 2
   282291541280001282141781280000001281 28
   163128000000194128166128132
PZ 1090 DATA 000000000000012822400222500 20
   00006
```

LISTING 2

```
0100 ; THE INFORMER - SOURCE CODE
0110 ; BY MATT LOVELESS & MIKE EGGERS
0120 ; (c)1987, ANTIC PUBLISHING, INC.

0130      .TITLE "INFORMER II -- Intern
al status line"
0140      *=   $0600
0150 ;
0160 SETVBV = $E45C    ;Sets VBL vector
0170 XITVBV = $E462    ;VBLANK exit rtn
0180 SDLST = $0230     ;Vector to D/L
0190 CONSOL = $D01F    ;Console buttons
0200 ROWCUR = $54      ;Cursor row
0210 COLCUR = $55      ;Cursor column
0220 SHFLOK = $02BE    ;CAPS/LWR status
0230 INVFLG = $02B6    ;Inv. video flag
0240 MEMLO = $90       ;BASIC low mem.
0250 HIMEM = $02E5     ;System high mem
0260 CASINI = $02      ;Cassette boot
0270 ;                  init. vector
0280 BOOTF = $09       ;Boot flag
0290      .PAGE "Setup system vectors"
0300 ;=========================
0310 ;  Put INFORMER online.
0320 ;=========================
0321 STARTCODE
0330 SETUP
0340      LDA #SETUP&255 ;high byte of
0311 ;                   init. addr.
0350      STA CASINI
0360      LDA #SETUP/256 ;low byte of
0370 ;                   init. addr.
0380      STA CASINI+1
0390      LDA BOOTF      ;Cassette boot?
0400      ORA #$02
0410      STA BOOTF
0420      LDA #$04       ;Check [OPTION]
0430      BIT CONSOL
0440      BNE ON
0450 ;
0460      RTS            ;If [OPTION]then
0470 ;                   don't set VBI's
0480 ;
0490 ON
0500      LDX #DOLINE/256 ;Hi VBL vctr
0510      LDY #DOLINE&255 ;Low byte
0520      LDA #7         ;Use def. vector
0530      JMP SETVBV     ;Set VBLANK vctr
0540 ;
0550 ;          (The RTS instruction
0560 ;           of SETVBV will return
0570 ;           control.)
0580 ;
0590      .PAGE "Build a new INFORMER l
ine"
0600 ;
0610 DOLINE
0620      LDA SDLST+1 ;If Hi byte of
0630 ;                DLIST vector
0640      CMP #DSPLST/256
0650 ;                is the same as
0660 ;                hi byte of mine
0670      BEQ MAKELN  ;then DLIST is
0680 ;                still setup.
0690 ;
0700 ;Setup new DISPLAY-LIST header
0710      LDA SDLST   ;Set DLIST JuMP
0720      CLC         ;to jump to
0730 ;               ;current-DLIST+3
0740      ADC #3      ;to avoid
0750 ;                BLANK-8-LINES
0760      STA JMPADR  ;instructions.
0770      LDA SDLST+1
0780      ADC #0
0790      STA JMPADR+1
0800      LDA #DSPLST&255 ;Reset DLIST
0810      STA SDLST   ;    vector to
0820      LDA #DSPLST/256 ;point to
0830      STA SDLST+1 ;    my header.
0840 ;
0850 ; Create the informer line
0860 ;
0870 MAKELN
0880      LDA ROWCUR  ;Print cur. row
0890      LDY #RSPOT-MESSAGE
0900 ;     (position in status line.)
0910      JSR CONVRT
0920 ;
0930      LDA COLCUR  ;Print column
0940      LDY #CSPOT-MESSAGE
0950      JSR CONVRT
0960 ;
0970 ;Find the CAPS/LOWER

0980 ;and INVERSE modes.
0990      LDA SHFLOK  ;Get CAPS/LOWR
1000 ;                status, convert
1010      CLC         ;into an index
1020      ROL A       ;between 0 and 2
1030      ROL A
1040      ROL A
1050      TAX
1060      LDA SHFTBL,X ;Get visual
1070 ;                 representation
1080      ORA INVFLG  ;Check INVERSE
1090      EOR #$80    ;Toggle inverse
1100 ;                if necessary.
1110      STA LSPOT
1120 ;    Put free RAM on screen
1130      SEC
1140      LDA HIMEM   ;subtract MEMLO
1150 ;                from HIMEM
1160      SBC MEMLO
1170      TAY         ;save it in Y
1180      LDA HIMEM+1
1190      SBC MEMLO+1
1200      LDX #$00
1210 LOOP
1220      PHA         ;save for later
1230      LSR A       ;SHIFT HIGH
1240 ;                NIBBLE DOWN
1250      LSR A
1260      LSR A
1270      LSR A
1280      JSR CB2AH   ;Convert binary
1290 ;                to ATASCII hex
1300      STA FRESPOT,X ;& display it
1310      INX
1320      PLA
1330      AND #$0F    ;mask hi nibble
1340      JSR CB2AH
1350 ;
1360      STA FRESPOT,X
1370      INX
1380      CPX #$04
1390      BEQ RETURN
1400 ;
1410      TYA
1420 ;
1430      JMP LOOP
1440 RETURN
1450      JMP XITVBV  ;go home
1460 ;
1470      .PAGE "Convert binary to prin
table hex"
1480 ;==============================
1490 ;  CONVERT BINARY TO HEX
1500 ;    (Mike made me do it)
1510 ;==============================
1520 CB2AH
1530      CMP #$0A    ;Digit 0 thru 9?
1540      BCC NUMBER  ;YES!!!
1550 ;
1560      CLC
1570      ADC #$97    ;Make it A-F
1580      RTS
1590 ;
1600 NUMBER
1610      ORA #$90    ;Make it 0-9
1620      RTS
1630      JMP RETURN  ;UNCONDITIONAL!
```

```
1640 ;
1650        .PAGE "Convert binary to prin
table"
1660 CONVRT
1670        LDX #4        ;Max 4x10 values
1680 LOOP2
1690        CMP MAXTBL,X ; <= to value?
1700        BCS FOUND    ;Yes
1710 ;
1720        DEX           ;No, next check
1730        BNE LOOP2
1740 ;
1750 FOUND
1760        SEC
1770        SBC MAXTBL,X ;Pull off tens
1780        ORA #$90     ;Make digit
1790 ;                    printable
1800        STA MESSAGE+1,Y
1810        LDA CHRTBL,X ;Print tens
1820 ;                    digit
1830        STA MESSAGE,Y
1840        RTS
1850        .PAGE "Tables and message lin
e"
1860 ;=========================
1870 ;  DATA AREAS AND TABLES
1880 ;=========================
1890 DSPLST
1900 ;      Prints INFORMER line
1910        .BYTE $70,$60,$10,$42
1920        .WORD MESSAGE
1930        .BYTE $01    ;Goto to old DL
1940 JMPADR
1950        .WORD 0
1960 ;
1970 SHFTBL
1980        .BYTE $61,$21,$40 ;"A","a","[graphics]
"
1990 MAXTBL
2000        .BYTE 0,10,20,30,40 ;Tens
2010 ;                           table
2020 CHRTBL
2030 ;      Printable tens:
2040        .BYTE $90,$91,$92,$93,$94
2050 ;
2060 MESSAGE
2070        .BYTE $80,$A9,$EE,$E6,$EF
2080        .BYTE $F2,$ED,$E5,$F2,$80,$D6
2090        .BYTE $AD,$EF,$E4,$E5,$9A,$80
2100 LSPOT
2110        .BYTE 0      ;Mode
2120        .BYTE $80,$D6,$B2,$80
2130 RSPOT
2140        .BYTE 0,0    ;Row
2150        .BYTE $80,$80,$A3,$80
2160 CSPOT
2170        .BYTE 0,0    ;Column
2180        .BYTE $C2,$80,$A6,$80,$84
2190 FRESPOT
2200        .BYTE 0,0,0,0
2210        .BYTE $80
2220       *=  $02E0
2230        .WORD STARTCODE
```

Atari "talks" to your robot

VERBOT COMMANDER

Article on page 39

LISTING 1

Don't type the TYPO II Codes!

```
XI 10 REM VERBOT COMMANDER
XO 20 REM BY ALBERT BAGGETTA
HA 30 REM (c) 1987, ANTIC PUBLISHING
MG 50 POKE 106,PEEK(740)-8
QY 60 GRAPHICS 0:POKE 752,1:POKE 710,18:P
   OKE 710,18:POKE 709,47:POSITION 9,1:?
   "[graphics]VERBOT COMMANDER[graphics]"
AE 62 DIM RES$(1),S(56),CMD$(8)
KD 64 CMD$="SHUDFBLR"
BL 65 POSITION 12,4:? "PLEASE WAIT":POSIT
   ION 9,7:? "LOADING CHARACTERS"
YH 70 POSITION 4,10:? " [graphics]    [graphics]    [graphics]
    [graphics]    [graphics]    [graphics]"
CN 75 POSITION 4,11:? "[graphics]    [graphics]    [graphics]
   [graphics]    [graphics]    [graphics]"
LN 80 POSITION 4,12:? " [graphics]    [graphics]    [graphics]
    [graphics]    [graphics]    [graphics]":? :? "      THESE AR
   E ROBOTS???"
OB 85 GOTO 510
CN 90 SOUND 0,220,10,10:FOR D=1 TO 100:NE
   XT D:SOUND 0,50,10,10:FOR D=1 TO 100:N
   EXT D:SOUND 0,0,0,0
LP 94 POSITION 12,4:? "              ":POSIT
   ION 9,7:? "                  "
EY 95 POSITION 8,14:? "    THAT'S BETTER
                    ":FOR D=1 TO 900:NEX
   T D
JH 96 ? :? "WANT TO LOAD OLD SOUNDS Y OR
   N ";:INPUT RES$:IF RES$="N" OR RES$="N
   O" THEN 815
JK 97 IF RES$<>"Y" AND RES$<>"YES" THEN 9
   6
WE 98 TRAP 300:CLOSE #2:OPEN #2,4,0,"D:SO
   UNDS.FIL"
RB 99 FOR V=1 TO 56
JS 100 GET #2,X:S(V)=X
PJ 102 NEXT V:CLOSE #2:TRAP 40000
RL 105 REM PRINT COMMAND SCREEN
KU 110 ? CHR$(125):POSITION 10,1:? "ROBOT
    COMMAND LIST":? :?
JF 115 ? "                    [graphics]      [graphics]
   [graphics]"
RS 120 ? "    [graphics]      [graphics]      [graphics]      [graphics]
   [graphics]    "
YI 125 ? "    [graphics]      [graphics]      [graphics]
   [graphics]":?
YD 130 ? "     [graphics]       [graphics]        [graphics]
   [graphics]":?
QF 135 ? "    Stop      Smile      Up      D
   own "
EJ 140 ? :? "[graphics]QUIT[graphics]
   [graphics]":?
BF 145 ? "   [graphics]    [graphics]     !";CHR$(34
   );"#      [graphics]"
SW 150 ? "    [graphics]      [graphics]     &%$      e
   ?b"
EG 155 ? "    [graphics]      [graphics]     '()      a
   :=":?
XU 160 ? "    [graphics]      [graphics]      [graphics]
   [graphics]":?
ZA 165 ? "    Forwd     Bkwrd     Left      R
   ight"
XJ 170 CLOSE #1:OPEN #1,4,0,"K:"
FD 175 SOUND 0,0,0,0:GET #1,K:POKE 16,112
   :POKE 53774,112
DE 180 IF CHR$(K)="Q" THEN POKE 106,PEEK(
```

continued on next page

```
   740):GRAPHICS 0:END
VK 181 FOR Z=1 TO 8:START=(Z-1)*7+1
XA 182 IF CMD$(Z,Z)<>CHR$(K) THEN 200
GU 195 FOR I=START TO START+6:SOUND 0,S(I
   ),10,14:FOR D=1 TO 10:NEXT D:NEXT I:PO
   P :GOTO 175
QK 200 NEXT Z:GOTO 175
LQ 300 ? "CAN'T FIND SOUND FILE ON DISK!"
   :GOTO 96
TI 350 ? "CAN'T SAVE SOUND FILE.":GOTO 83
   0
HE 505 REM REDEFINE CHARACTER SET
WM 510 CHSET=(PEEK(106)-8)*256:FOR I=0 TO
    1023:POKE CHSET+I,PEEK(57344+I):NEXT
   I
TC 512 POKE 756,CHSET/256:POKE 752,1
YD 515 RESTORE 535
XH 520 READ A:IF A=-1 THEN 90
EK 525 FOR J=0 TO 7:READ B:POKE CHSET+A*8
   +J,B:NEXT J
OA 530 GOTO 520
HC 535 DATA 1,0,0,0,0,1,2,4,9
MA 540 DATA 2,0,32,120,132,2,125,254,255
QX 545 DATA 3,32,64,240,76,34,1,241,121
XN 550 DATA 4,172,146,72,68,72,132,136,16

HU 555 DATA 5,255,254,255,255,255,254,253
   ,255
AD 560 DATA 6,19,35,103,39,39,19,11,5
BS 565 DATA 7,2,3,3,3,1,0,0,0
WD 570 DATA 8,254,124,128,65,170,148,64,3
   2
KW 575 DATA 9,32,64,128,0,0,0,0,0
JN 580 DATA 10,4,2,15,50,68,128,143,158
DB 585 DATA 11,0,4,30,33,64,190,127,255
XT 590 DATA 12,0,0,0,0,128,64,32,144
DF 595 DATA 13,52,73,18,34,18,33,17,8
MZ 600 DATA 14,255,255,255,255,255,255,12
   7,255
UH 605 DATA 15,4,2,1,0,0,0,0,0
NF 610 DATA 26,127,62,1,130,85,33,2,4
RT 615 DATA 27,64,192,192,192,128,0,0,0
VN 620 DATA 28,4,2,1,0,0,0,0,0
SR 625 DATA 29,64,192,192,192,128,0,0,0
IE 630 DATA 30,200,196,230,228,228,200,20
   8,160
KT 635 DATA 31,255,127,255,255,255,127,19
   1,255
DE 640 DATA 32,53,73,18,34,18,33,17,8
JZ 645 DATA 59,0,4,30,33,64,190,255,255
NL 650 DATA 61,0,0,0,0,128,64,32,16
SJ 655 DATA 64,0,0,0,0,0,0,0,0
DG 660 DATA 65,255,127,191,223,224,230,23
   3,4
SX 665 DATA 66,231,231,231,231,0,118,41,4
   1
XN 670 DATA 67,255,254,253,251,7,103,87,8
   0
OK 675 DATA 68,2,233,230,224,223,191,127,
   255
AD 680 DATA 69,41,41,38,0,231,231,231,231

DK 685 DATA 70,96,71,71,7,251,253,254,255

OQ 690 DATA 71,0,18,36,73,19,38,79,24
RM 695 DATA 72,0,0,255,0,0,0,129,66
YF 700 DATA 73,0,72,36,146,200,100,242,24

RS 705 DATA 74,59,107,72,135,143,136,132,
   255
JS 710 DATA 75,66,66,66,129,255,0,0,255
LM 715 DATA 76,220,214,18,225,241,17,33,2
   55
FI 720 DATA 77,128,120,24,40,72,0,192,240

TM 725 DATA 78,31,63,127,111,223,255,255,
   255
RO 730 DATA 79,248,252,254,254,255,255,25
   5,255
GJ 735 DATA 80,220,198,113,28,7,0,0,0
FH 740 DATA 81,128,140,242,2,242,140,128,
   128
YK 745 DATA 82,1,1,1,1,1,1,1,1
AR 750 DATA 83,128,128,128,128,64,32,64,2
   55
QZ 755 DATA 84,1,1,1,1,2,4,2,255
YT 760 DATA 85,0,0,0,0,3,12,49,62
QI 765 DATA 86,128,140,178,194,28,96,128,
   128
WR 770 DATA 87,0,8,144,160,192,240,0,0
ZX 775 DATA 88,8,4,2,255,2,4,8,0
KZ 780 DATA 89,16,32,64,255,64,32,16,0
MD 785 DATA 96,4,2,15,50,68,128,143,30
YJ 790 DATA 97,4,2,1,0,0,0,0,0
NK 795 DATA 98,200,196,230,228,228,200,21
   6,160
WN 800 DATA 127,16,24,28,30,28,24,16,155
GS 805 DATA -1
OA 810 REM COMMAND SOUNDS
RK 815 REM
OF 820 ? :? :? "GENERATING SOUNDS FOR ■■V
   ERBOT■■":?
ZH 825 FOR V=1 TO 56:J=INT(RND(0)*255)+20
   :S(V)=J:SOUND 0,S(V),10,10:NEXT V:SOUN
   D 0,0,0,0
AD 830 ? :? "SAVE THESE SOUNDS  Y OR N ";
   :INPUT RES$:IF RES$="N" OR RES$="NO" T
   HEN 110
NK 832 IF RES$<>"Y" AND RES$<>"YES" THEN
   830
JI 835 TRAP 350:CLOSE #2:OPEN #2,8,0,"D:S
   OUNDS.FIL"
CN 836 FOR V=1 TO 56
DI 838 X=S(V):PUT #2,X
TI 839 NEXT V:CLOSE #2:TRAP 40000:GOTO 11
   0
```

making 8-bit pictures move

ATARI ANIMATION

Article on page 35

LISTING 1

Don't type the TYPO II Codes!

```
FX 1 REM HAUNTED HOUSE, PART 1
OQ 2 REM BY ROBIN ALAN SHERER
PN 3 REM (c) 1987, ANTIC PUBLISHING INC.
QO 1000 REM CHAR1
MM 1040 GRAPHICS 0:POKE 752,1:REM TURN OF
   F CURSOR - SET GRAPHICS MODE
IX 1050 SETCOLOR 2,0,0:SETCOLOR 1,0,10
WZ 1060 FOR R=15 TO 22:REM NOW JUST PRINT
    STANDARD CHARACTERS
QR 1070 POSITION 2,R:? "■";:REM BY HIT OR
    MISS METHOD
JI 1080 NEXT R
GI 1090 POSITION 2,14:? "◢■■■■■■■"
WO 1100 POSITION 3,13:? "♣♣♣♣♣♣♣"
HH 1110 POSITION 1,15:? "◢"
KV 1120 FOR R=6 TO 13
MG 1130 POSITION 8,R:? "■"
IY 1140 NEXT R
VD 1150 POSITION 1,9:? "▬▬▬▬▬▬▬"
LB 1160 POSITION 1,10:? "SPOOKY"
```

```
YF 1170 POSITION 1,11:? "CASTLE"
QF 1180 POSITION 13,0:? "◢◣"
DH 1190 FOR R=1 TO 6
LW 1200 POSITION 13-R,R:? "◢"
NF 1210 POSITION 14+R,R:? "◣"
IU 1220 NEXT R
JQ 1230 FOR R=6 TO 11
KZ 1240 POSITION 19,R:? "■"
JD 1250 NEXT R
MU 1260 POSITION 20,11
BS 1270 ? "■■■■■ ■■■ ■■■ ■"
OU 1280 POSITION 24,10
LM 1290 ? "■■■ ■■■ ■■■"
SZ 1300 FOR R=10 TO 22
MX 1310 POSITION 33,R:? "■";
IW 1320 NEXT R
DV 1330 POSITION 35,19:? " ⊞ "
LM 1340 POSITION 35,20:? "◢■◣"
UF 1350 POSITION 35,21:? "RIP"
DA 1360 POSITION 35,22:? "■■■";
ZY 1370 POSITION 13,5:? "/□□□\"
RZ 1380 POSITION 13,6:? "□   □"
XN 1390 POSITION 13,7:? "\□□□/"
EE 1400 POSITION 0,23
MD 1410 FOR I=1 TO 39:? "■";:NEXT I
XU 1420 RESTORE 1480:REM PRINT STARS BY S
TORING POSITIONS IN
UN 1430 FOR STAR=1 TO 10:REM DATA STATEME
NTS
ET 1440 READ C,R:POSITION C,R:? "."
VD 1450 NEXT STAR
UX 1460 POSITION 33,5:? "◙"
VA 1470 REM —STARS
FY 1480 DATA 2,1,3,3,19,0,23,0,29,0
JW 1490 DATA 18,2,24,5,26,1,31,2,38,2
```

leaves you more time to play the game

GOLF HANDICAP CALCULATOR

Article on page 30

LISTING 1

Don't type the TYPO II Codes!

```
MX 10 REM GOLF HANDICAPPER
AU 20 REM BY JERRY WHITE
GL 30 REM (c) 1986, ANTIC PUBLISHING
JZ 100 GRAPHICS 0:POKE 752,1:GOSUB 810:GO
TO 120
RK 110 GOSUB 1020
VG 120 POKE 82,10:POKE 752,0
JJ 130 ? :? "1 ENTER SCORES"
DR 140 ? :? "2 DISPLAY SCORES"
ZO 150 ? :? "3 SAVE SCORES & EXIT"
QL 160 ? :? "YOUR CHOICE";:TRAP 110:INPUT
 CHOICE:TRAP 40000
VV 170 CHOICE=INT(CHOICE):POKE 82,2:? CHR
$(125)
QR 180 IF CHOICE<1 OR CHOICE>3 THEN 110
NE 190 IF CHOICE<3 THEN POKE 710,CHOICE*8
0
EH 200 ON CHOICE GOTO 210,500,680
WK 210 TS=TS+1:IF TS>20 THEN TS=20
TE 220 D$(TS*20-19,TS*20)=BLANK$
BH 230 ? :? "ENTER NEW SCORE INFORMATION:
"
QO 240 ? :? "DATE (YYMMDD)";:INPUT T$
MK 250 IF LEN(T$)<>6 THEN GOSUB 790:GOTO
240
AD 260 FOR ME=1 TO 6:IF T$(ME,ME)<"0" OR
T$(ME,ME)>"9" THEN POP :GOSUB 790:GOTO
 240
KZ 270 NEXT ME
PX 280 D$(TS*20-19,TS*20-14)=T$
UP 290 ? :? "YOUR SCORE";:INPUT T$
MR 300 IF LEN(T$)<2 OR LEN(T$)>3 THEN GOS
UB 790:GOTO 290
PC 310 FOR ME=1 TO LEN(T$):IF T$(ME,ME)<"
0" OR T$(ME,ME)>"9" THEN POP :GOSUB 79
0:GOTO 290
KQ 320 NEXT ME
OY 330 D$(TS*20-12,TS*20-13+LEN(T$))=T$:S
CORE=VAL(T$)
SY 340 ? :? "COURSE RATING";:INPUT T$
GD 350 IF LEN(T$)<2 OR LEN(T$)>4 THEN GOS
UB 790:GOTO 340
ED 360 FOR ME=1 TO LEN(T$)
FZ 370 IF LEN(T$)<3 THEN GOTO 390
QH 380 IF ME=3 AND T$(3,3)="." THEN GOTO
400
DV 390 IF T$(ME,ME)<"0" OR T$(ME,ME)>"9"
 THEN POP :GOSUB 790:GOTO 340
KN 400 NEXT ME
RA 410 D$(TS*20-8,TS*20-9+LEN(T$))=T$:HAN
DICAP=VAL(T$)
KE 420 ? :? "IS THE ABOVE DATA CORRECT (Y
/N)";:INPUT T$
XN 430 IF  NOT LEN(T$) THEN GOTO 420
XY 440 IF T$(1,1)="Y" THEN B$=D$:GOTO 470
GO 450 IF T$(1,1)="N" THEN ? CHR$(125):GO
TO 220
NV 460 GOTO 420
OZ 470 T$=STR$((SCORE-HANDICAP)*0.95):LT=
LEN(T$):IF LT>5 THEN LT=5
QM 480 D$(TS*20-4,TS*20-5+LT)=T$
MM 490 GOTO 110
XT 500 IF  NOT TS THEN ? "I HAVE NO SCORE
S TO DISPLAY":? :? "PRESS RETURN";:INP
UT T$:GOTO 110
CR 510 SORT=USR(ADR(SORT$),ADR(D$),20,TS,
1,6,1)
JX 520 POKE 82,10:? CHR$(125):POKE 752,1:
TOTAL=0:BEST=0
CE 530 ? " DATE   SCORE  RATING "
ZT 540 FOR ME=1 TO TS:? D$(ME*20-19,ME*20
-14);
HJ 550 SCORE=VAL(D$(ME*20-12,ME*20-10)):I
F SCORE>99 THEN ? "   ";
DG 560 IF SCORE<100 THEN ? "    ";
BU 570 ? D$(ME*20-12,ME*20-10);:POSITION
25,ME+1:? D$(ME*20-8,ME*20-5);
CC 580 IF D$(ME*20-5,ME*20-5)=" " THEN ?
CHR$(30);CHR$(30);".0":GOTO 600
DA 590 ?
KP 600 NEXT ME
UJ 610 BEST=TS/2
CD 620 IF TS/2<>INT(TS/2) THEN BEST=INT(B
EST+1)
HX 630 B$=D$:SORT=USR(ADR(SORT$),ADR(B$),
20,TS,16,5,0)
GZ 640 FOR ME=1 TO BEST:TOTAL=TOTAL+VAL(B
$(ME*20-4,ME*20)):NEXT ME
FW 650 HANDICAP=INT(TOTAL/BEST):POKE 752,
0
PS 660 ? "CURRENT HANDICAP=";HANDICAP:? "
 PRESS RETURN";
RH 670 POKE 764,255:INPUT T$:GOTO 110
NK 680 IF  NOT TS THEN 740
ER 690 GOSUB 1020:POKE 752,1:POKE 201,6:?
 :? ,"SAVING ";DISK$
EM 700 IF TS>20 THEN TS=20
FB 710 TRAP 750:CLOSE #1:OPEN #1,8,0,DISK
$
```

continued on next page

```
RN 720 FOR ME=1 TO TS:? #1;D$(ME*20-19,ME
   *20):NEXT ME
DV 730 CLOSE #1:? :? ,DISK$;" SAVED":POKE
    752,0:POKE 201,10
KU 740 GRAPHICS 0:END
GG 750 ? :? "I WAS UNABLE TO SAVE YOUR DA
   TA FILE"
OD 760 ? :? "PLEASE CHECK YOUR DISK DRIVE
    THEN"
GQ 770 ? :? "PRESS RETURN TO TRY AGAIN";:
   INPUT T$
RK 780 GOTO 680
EZ 790 ? :? "YOUR INPUT FORMAT IS UNACCEP
   TABLE":RETURN
YS 800 GRAPHICS 0:CLOSE #1:? :? "UNACCEPT
   ABLE DATA FILE FORMAT":END
GF 810 GOSUB 1020:POKE 752,1
BB 820 DIM SORT$(182),D$(400),B$(400),T$(
   20),BLANK$(20),DISK$(15)
WS 830 D$=" ":D$(400)=" ":D$(2)=D$:B$=D$:
   T$=D$:BLANK$=D$
TD 840 DISK$="D1:GOLFHDCP.DAT"
FN 850 FOR BYTE=1 TO 182:READ SORT:SORT$(
   BYTE,BYTE)=CHR$(SORT):T=T+SORT:NEXT BY
   TE
QD 860 IF T<>28229 THEN ? :? "ERROR IN DA
   TA STATEMENTS":END
EM 870 POKE 710,148:POKE 709,10:POKE 712,
   0:POKE 82,2:TS=0
SR 880 DATA 216,104,56,233,3,133,217,104,
   133,204,104,133,203,104,133,215,104,13
   3,214,104
TX 890 DATA 133,210,104,133,209,162,0,104
   ,104,157,0,1,232,228,217,208,246,56,16
   5,209
SS 900 DATA 233,2,133,209,165,210,233,0,1
   33,210,48,108,165,209,133,211,165,210,
   133,212
OK 910 DATA 165,204,133,206,133,208,165,2
   03,133,205,24,101,214,133,207,165,208,
   101,215,133
AP 920 DATA 208,160,0,185,0,1,190,2,1,134
   ,218,190,1,1,200,200,200,132,216,168
KS 930 DATA 136,177,205,209,207,240,12,16
   5,218,208,4,144,16,176,46,144,44,176,1
   0,200
OM 940 DATA 202,208,234,164,216,196,217,2
   08,210,198,211,169,255,197,211,208,6,1
   66,212,240
UI 950 DATA 11,198,212,165,208,133,206,16
   5,207,24,144,172,165,213,240,4,134,213
   ,208,148
PV 960 DATA 96,134,213,160,0,177,205,170,
   177,207,145,205,138,145,207,200,196,21
   4,208,241,240,203
EF 970 TRAP 1010:CLOSE #1:OPEN #1,4,0,DIS
   K$
CL 980 IF TS=20 THEN 1010
LJ 990 INPUT #1;T$:IF LEN(T$)<>20 THEN GO
   TO 800
FX 1000 TS=TS+1:D$(TS*20-19,TS*20)=T$:GOT
   O 980
KT 1010 CLOSE #1:TRAP 40000:B$=D$:RETURN
KP 1020 POKE 82,2:POKE 710,0:? "█"
LI 1030 ? :? "        GOLF HANDICAP CALCULA
   TOR"
DH 1040 ? :? "              by Jerry White"
AO 1050 RETURN
```

game of the month

CITADEL

Article on page 22

LISTING 1

Don't type the TYPO II Codes!

```
OB 10 REM CITADEL
MI 20 REM BY HEATH LAWRENCE
HA 30 REM (c) 1987, ANTIC PUBLISHING
OJ 40 GOSUB 470:GOSUB 360
PL 50 GOSUB 400
BJ 60 BD=BD+1:ON BD=37 GOSUB 240
YW 70 H=INT(RND(0)*36)+2:Y=1:ON BFLAG(H)=
   0 GOTO 70:BFLAG(H)=0:P=0
MM 80 REM MOVE BOMB
YZ 90 FOR Z=1 TO 2:S=STICK(0):SX=SX-1*(S=
   11)+1*(S=7):SX=SX-1*(SX>35)+1*(SX<0):P
   OSITION SX,19:? SHI$:NEXT Z:POKE 77,0
HD 100 V=INT(RND(0)*3)-1:IF Y>(SK+14) THE
   N V=0
NB 110 ON (Y=19 AND PEEK(SC+H+40*Y)=101)
   GOTO 120:POKE SC+H+40*Y,P
WL 120 H=H+V:Y=Y+1:SOUND 1,Y+10,10,8:IF H
   <1 THEN H=1
DY 130 IF H>37 THEN H=37
VD 140 P=PEEK(SC+H+40*Y):ON P=101 GOTO 29
   0:ON Y>19 GOTO 320:POKE SC+H+40*Y,97:G
   OTO 90
GY 150 REM GAME OVER
KO 160 POSITION 11,10:? "CITADEL DESTROYE
   D!":POSITION SX+1,18:? "  "
NN 170 FOR X=100 TO 200 STEP 8:SOUND 1,X,
   8,8:POSITION 0,20:? "iiiiiiiiiiiiiiii
   iiiiiiiiiiiiiiiiiiiiii"
MP 180 POSITION 0,20:? "kkkkkkkkkkkkkkk
   kkkkkkkkkkkkkkkkkkkkk":NEXT X:SOUND 1
   ,0,0,0:POSITION 0,20
DU 190 ? "fffffffffffffffffffffffffffff
   ffffffff":POSITION 7,12:? "PRESS START
    TO PLAY AGAIN"
SB 200 ON PEEK(53279)<>6 GOTO 200:GOTO 50
ZG 210 REM UPDATE STATS
SW 220 POSITION 2,0:? "SCORE:";SCO:POSITI
   ON 27,0:? "IMPACTS:";IMP:ON IMP=5 GOTO
    160:RETURN
PI 230 REM RACK CLEARED
SV 240 POSITION 12,0:? "WAVE COMPLETED!":S
   CO=SCO+25:GOSUB 220:FOR N=1 TO 9 STEP
   2:SOUND 1,MA1(N),10,8
IT 250 FOR D=1 TO MA1(N+1):NEXT D:NEXT N:
   FOR N=1 TO 9 STEP 2:SOUND 1,MA2(N),10,
   8:FOR D=1 TO MA2(N+1):NEXT D:NEXT N
RC 260 FOR N=1 TO 9 STEP 2:SOUND 1,MA1(N)
   ,10,8:SOUND 2,MA2(N),10,8:FOR D=1 TO M
   A1(N+1):NEXT D:NEXT N:POSITION 12,0
WJ 270 ? "               ":SOUND 1,0,0,0:S
   OUND 2,0,0,0:GOSUB 440:RETURN
ZK 280 REM SHIELD HIT
SO 290 SCO=SCO+5:POSITION H,Y:? " ":GOSUB
    220:FOR X=30 TO 70:POSITION SX+1,19:?
    "pp":POSITION SX+1,19:? "qq"
VA 300 SOUND 1,X,12,8:NEXT X:SOUND 1,0,0,
   0:POSITION SX+1,19:? "  ":GOTO 60
QY 310 REM CITY HIT
HX 320 IMP=IMP+1:GOSUB 220:FOR X=100 TO 2
   00 STEP 8:SOUND 1,X,8,8:POKE 710,67:PO
   SITION H,Y:? "k":POKE 710,67
RB 330 POSITION H,Y:? "k":POKE 710,69:POS
   ITION H,Y:? "i":POKE 710,65:POSITION H
   ,Y:? "f":NEXT X:SOUND 1,0,0,0
VZ 340 POKE 710,0:GOTO 60
JO 350 REM SELECT LEVEL
CK 360 GRAPHICS 18:POKE 712,82:POSITION 2
   ,5:? #6;"skill level▬▶":SK=1
AS 370 S=STICK(0):SK=SK+1*(S=14)-1*(S=13)
```

```
   :SK=SK+1*(SK<1)-1*(SK>3):POSITION 16,5
   :? #6;SK:FOR D=1 TO 35:NEXT D
RD 380 ON STRIG(0)<>0 GOTO 370:RETURN
TY 390 REM PLAYFIELD
AA 400 GRAPHICS 0:POKE 559,0:POKE 756,ST/
   256:POKE 752,1:POKE 710,0:SC=PEEK(88)+
   256*PEEK(89):SCO=0:IMP=0:SX=17
UQ 410 FOR X=0 TO 38:POSITION X,21:? "b":
   POSITION X,22:? "b":NEXT X:POSITION 0,
   20
TH 420 ? "dcd dc c cdd c dc dc ddc d cdc
   cdc dc":FOR X=1 TO 80:POSITION INT(RND
   (0)*39),INT(RND(0)*19):? "j":NEXT X
CZ 430 POSITION 10,9:? "lm[illegible]no[illegible]":GOSUB
    220:POKE 559,34:FOR X=35 TO 0 STEP -1

AW 440 SOUND 1,10,4,8:POSITION X,1:? "hga
   ":FOR D=1 TO 15:NEXT D:NEXT X:FOR I=2
   TO 37:BFLAG(I)=1:NEXT I
IG 450 POSITION 0,1:? "  ":BD=0:POKE 16,1
   12:POKE 53774,112:RETURN
XB 460 REM REDEFINE C-SET
TW 470 DIM MA1(10),MA2(10),SHI$(10),BFLAG
   (37),Q$(2),A$(136):SHI$=" ee ":POKE 10
   6,PEEK(740)-5
GC 480 Q$(1,1)=CHR$(34):Q$(2,2)=Q$:GRAPHI
   CS 17:POKE 712,66
PB 490 MOV=ADR("hh[illegible]")
XS 500 A$(1,68)="[illegible]"
BM 510 A$(69,136)="[illegible]"
VF 520 A$(88,88)=Q$:A$(121,122)=Q$:A$(133
   ,134)=Q$
BT 530 POSITION 6,5:? #6;"CITADEL":POSITI
   ON 1,7:? #6;"BY HEATH LAWRENCE":POSITI
   ON 2,9:? #6;"(c)1987, ANTIC"
WT 540 ST=(PEEK(106)+1)*256:JNK=USR(MOV,5
   7344,ST,1024):FOR X=1 TO 300:NEXT X
ZF 550 JNK=USR(MOV,ADR(A$),776+ST,136)
SD 560 FOR X=1 TO 10:READ Z:MA1(X)=Z:NEXT
    X:FOR X=1 TO 10
TY 570 READ Z:MA2(X)=Z:NEXT X:RETURN
AA 580 REM TUNE DATA
IP 590 DATA 50,30,46,30,42,30,46,30,50,50
   ,70,30,66,30,62,30,66,30,70,75
```

LISTING 2

```
EA 10 REM CITADEL, LISTING 2
MI 20 REM BY HEATH LAWRENCE
HA 30 REM (c) 1987, ANTIC PUBLISHING
DM 35 REM CREATES LINES 490-510 FOR CITAD
   EL.BAS
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "     ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
GF 1000 DATA 232
DF 1010 DATA 0520570480320770790860610650
   68082040034104104133241104133240104133
   213104133212104133239104133
BD 1020 DATA 2381600001772401452122302122
   08002230213230240208002230241198238208
   234198239016230096034041155
GJ 1030 DATA 0530480480320650360400490440
   54056041061034000058235235235235058000
   238061109223158113231220060
PH 1040 DATA 1262312550661260661261260600
   60126066126102195085085085000000000000
   000000000016044106085171215
FG 1050 DATA 1241320042540012530012540000
   00001007010254192126000018064004034155
   053049048032065036040054057
RO 1060 DATA 0440490510540410610340320080
   640000000000000160000000000000104065008
   032129036000035000000003015
NS 1070 DATA 0310630630630000001922402482
   5222522520630630631015003000000252252
   252248240192000000035035085
JQ 1080 DATA 0851361360000001361360850850
   35035000000034155
```

easy-to-type space shoot-em-up

STING RAYER

Article on page 23

LISTING 1

Don't type the TYPO II Codes!

```
CL 4 REM STING RAYER
YY 5 REM BY STEVE ARGYLE
GI 6 REM (c) 1987, ANTIC PUBLISHING
OX 7 GOSUB 400
DF 8 SCORE=0:PNT=200:SHOTS=30
UB 10 X=15:Y=12
BK 20 GRAPHICS 0:POKE 752,1
KF 30 POSITION 2,0:? "STING RAYER   shots
   =";SHOTS:POSITION 27,0:? "score=0"
LA 35 REM IS TRIGGER PUSHED?
NZ 36 IF SHOTS=0 THEN 500
YY 37 IF STRIG(0)=0 THEN FOR N=15 TO 25:S
   OUND 0,N,10,10:NEXT N:GOSUB 100:SOUND
   0,0,0,0
UP 40 REM ADD TO X,Y IF JOYSTICK MOVED
MF 41 D=STICK(0):X=X+(D=7)+(D=6)+(D=5)-(D
   =10)-(D=11)-(D=9)
QB 42 Y=Y-(D=10)-(D=14)-(D=6)+(D=9)+(D=13
   )+(D=5)
PR 43 REM STOP FROM RUNNING OFF SCREEN
OX 44 IF X<1 THEN X=1
QX 45 IF Y<2 THEN Y=2
SA 46 IF Y>12 THEN Y=12
UM 47 IF X>33 THEN X=33
PT 48 REM DRAW TIE FIGHTER AT NEW PLACE
UL 49 POSITION X,Y-1
```

continued on next page

```
AF 50 ? "      "
ML 55 POSITION X,Y
EA 60 ? " ◣▁◢ "
SZ 65 POSITION X,Y+1
AH 70 ? "      "
GV 72 IF HIT>0 THEN HIT=HIT-1:GOTO 35
SI 75 GOSUB 135
LS 80 IF PNT>100 THEN PNT=PNT-5
UP 85 GOTO 35
RG 100 REM SUBROUTINE FOR BULLET
YN 105 SHOTS=SHOTS-1:POSITION 22,0:? SHOT
   S;" "
DH 110 FOR N=Y+1 TO 21:POSITION X+2,N:? "
   "
VE 111 IF N=E+1 AND C=X THEN POP :GOTO 20
   0
LZ 112 POSITION X+2,N+1:? "▯"
ID 114 NEXT N
NL 115 POSITION X+2,N:? "*"
MO 120 SOUND 0,25,8,10:POKE 20,0
IV 125 IF PEEK(20)<6 THEN 125
IH 130 POSITION X+2,N:? " ":SOUND 0,0,0,0
   :RETURN
IE 135 C=C+INT(RND(0)*3)-1:E=E+INT(RND(0)
   *3)-1
MA 136 IF C<1 THEN C=1
XH 137 IF C>35 THEN C=35
CA 138 IF E>19 THEN E=19
VH 139 IF E<14 THEN E=14
DH 140 POSITION C,E
EB 145 ? "      "
OJ 149 POSITION C,E+1
XK 150 ? "  ✱ "
OU 156 POSITION C,E+2
EM 158 ? "      "
ZL 170 RETURN
KX 200 REM HIT
NN 205 SOUND 0,35,8,10:POKE 20,0
MX 210 POSITION X+2,N:? "*"
FY 215 POSITION X+2,N+2:? PNT;
SU 218 GOSUB 400
CQ 220 IF PEEK(20)<20 THEN 220
TT 222 SCORE=SCORE+PNT:POSITION 33,0:? SC
   ORE:PNT=200
YU 225 POSITION X+2,N:? " ":POSITION X+2,
   N+2:? "    ";
OY 230 HIT=10+INT(RND(0)*9):RETURN
QM 400 C=2+INT(RND(0)*32):E=15+INT(RND(0)
   *4):RETURN
HY 500 POSITION 11,2:? "- OUT OF AMMO -":
   POSITION 14,4:? "press START"
WI 510 IF PEEK(53279)<>6 THEN 510
UT 520 RUN
```

useful label database

LOGO MAILING LIST

Article on page 51

LISTING 1

```
TO ADDRESS
CS CT TS
SETCURSOR [12 10] PRINT [LOGO ADDRESS
 BOOK]
SETCURSOR [18 14] PRINT [by]
SETCURSOR [9 16] PRINT [M. Lorenz / A
. Moose]
SETCURSOR [11 18] PRINT [December , 1
986]
SETCURSOR [7 20] PRINT [c.1986, Antic
 Publishing]
PRESS.C
END

TO PRESS.C
SETCURSOR [4 22] PRINT [Press C to co
ntinue]
CHOOSE
END

TO CHOOSE
MAKE "CHOICE ( RC )
IF :CHOICE = "C [CT MENU]
IF :CHOICE = "1 [CT MAKE "DATA [] INP
UT MENU]
IF :CHOICE = "2 [CT ADD MENU]
IF :CHOICE = "3 [CT MAKE "DATA [] UPD
ATE MENU]
IF :CHOICE = "4 [CT GETMAIL PRINT.ALL
 MENU]
IF :CHOICE = "5 [CT SELECT MENU]
IF :CHOICE = "6 [CT QUIT STOP]
CT PR [YOU ENTERED AN INCORRECT NUMBE
R]
WAIT 100 MENU
END

TO MENU
CT
PR [YOUR CHOICES ARE...]
PR []
PR [* 1 - CREATE A NEW MAILING LIST]
PR []
PR [* 2 - ADD TO THE EXISTING LIST]
PR []
PR [* 3 - UPDATE AN ENTRY]
PR []
PR [* 4 - PRINT OUT THE WHOLE LIST]
PR []
PR [* 5 - PRINT OUT A SELECTED NAME]
PR []
PR [* 6 - QUIT]
PR []
CHOOSE
END

TO ADD
GETMAIL
MAKE "DATA BL :NEWDATA
INPUT
END

TO UPDATE
GETMAIL
MAKE "NEWDATA BL :NEWDATA
PR [GIVE FIRST AND LAST NAME]
MAKE "TAG ( RL )
FIND
END

TO INPUT
CT
PR [ENTER FIRST AND LAST NAME]
PR [( Or END for Main Menu )]
MAKE "NAMELIST RL
IF EQUALP :NAMELIST [END] [DATASAVE S
TOP]
PR [ENTER STREET ADDRESS]
MAKE "STLIST RL
PR [ENTER CITY, STATE ZIP]
MAKE "CITYLIST RL
PR [DO YOU WANT TO MAKE CORRECTIONS?
( Y / N )]
MAKE "CHOICE RC
IF EQUALP :CHOICE "Y [INPUT STOP]
MAKE "DATA LPUT :NAMELIST :DATA
```

```
MAKE "DATA LPUT :STLIST :DATA
MAKE "DATA LPUT :CITYLIST :DATA
INPUT
END

TO PRINT.ALL
SETWRITE "P:
PR FIRST :NEWDATA
PR FIRST BF :NEWDATA
PR FIRST BF BF :NEWDATA
PR []
MAKE "NEWDATA BF BF BF :NEWDATA
IF EQUALP FIRST :NEWDATA "* [SETWRITE
 [] PRESS.C STOP]
PRINT.ALL
END

TO GETMAIL
SETREAD "D:MAILIST"
MAKE "NEWDATA RL
SETREAD []
END

TO SELECT
PR [GIVE FIRST AND LAST NAME]
MAKE "TAG RL
GETMAIL
SELECTPRNT
END

TO QUIT
CT
PR [THAT IS ALL, FOLKS]
WAIT 50
CT
END

TO FIND
IF EQUALP :TAG FIRST :NEWDATA [CORREC
T STOP]
MAKE "DATA LPUT FIRST :NEWDATA :DATA
MAKE "DATA LPUT FIRST BF :NEWDATA :DA
TA
MAKE "DATA LPUT FIRST BF BF :NEWDATA
:DATA
MAKE "NEWDATA BF BF BF :NEWDATA
IF EMPTYP :NEWDATA [PR [NO MATCHING N
AME] WAIT 100 STOP]
FIND
END

TO CORRECT
PR [HERE IS THE CURRENT ENTRY]
PR []
PR FIRST :NEWDATA
PR FIRST BF :NEWDATA
PR FIRST BF BF :NEWDATA
PR []
PR [ENTER NAME]
MAKE "NAMELIST RL
PR [ENTER STREET ADDRESS]
MAKE "STLIST RL
PR [ENTER CITY, STAT ZIP]
MAKE "CITYLIST RL
PR []
PR [DO YOU WANT TO MAKE CORRECTIONS?
( Y / N )]
MAKE "CHOICE RC
IF EQUALP :CHOICE "Y [CORRECT STOP]
MAKE "NEWDATA BF BF BF :NEWDATA
MAKE "NEWDATA FPUT :CITYLIST :NEWDATA

MAKE "NEWDATA FPUT :STLIST :NEWDATA
MAKE "NEWDATA FPUT :NAMELIST :NEWDATA

CREATELIST
END

TO DATASAVE
MAKE "FILEND "*
MAKE "DATA LPUT :FILEND :DATA
SETWRITE "D:MAILIST
PR :DATA
SETWRITE []
QUIT
END

TO CREATELIST
MAKE "DATA LPUT FIRST :NEWDATA :DATA
MAKE "DATA LPUT FIRST BF :NEWDATA :DA
TA
MAKE "DATA LPUT FIRST BF BF :NEWDATA
:DATA
MAKE "NEWDATA BF BF BF :NEWDATA
IF EMPTYP :NEWDATA [DATASAVE STOP]
CREATELIST
END

TO PRINT.SOME
SETWRITE "P:
PR FIRST :NEWDATA
PR FIRST BF :NEWDATA
PR FIRST BF BF :NEWDATA
SETWRITE []
END

TO SELECTPRNT
IF EQUALP :TAG FIRST :NEWDATA [PRINT.
SOME PRESS.C STOP]
MAKE "NEWDATA BF BF BF :NEWDATA
IF EQUALP FIRST :NEWDATA "* [PR [NO M
ATCHING NAME FOUND] PRESS.C STOP]
SELECTPRNT
END
```

ST RESOURCE

A LITTLE GEM

Article on page 58

LISTING 1

```
/*
 *  ST GEM Shell
 *  (c) 1986 Antic Publishing
 *  Version 072486  Thursday
 *  Written by Patrick Bass
 *
 *---- Alcyon Include File ----------------------------*/
```

continued on next page

```
#include          "osbind.h"

#define    TRUE               (1)
#define    FALSE              (0)
#define    begin              {
#define    end                }
#define    wend               }
#define    repeat             }
#define    next               }
#define    endif              }
#define    not                !
#define    equals             ==
#define    does_not_equal     !=
#define    then
/*--------------- Alcyon Declarations/Equates --------*/
int   contrl[ 12 ],
      intin[ 256 ],   ptsin[ 256 ],
      intout[ 256 ], ptsout[ 256 ],
      workin[]={ 1,1,1,1,1,1,1,1,1,1,2 }, workout[ 57 ],
      i, j, k, l, finished, gem_handle;

/*---------------------------------------------------*/
main()
begin
      initialize();

      do begin

            your_work();

      repeat while( not finished );

      terminate();
end

/*---------------------------------------------------*/
initialize()
begin
      appl_init();
      gem_handle=graf_handle( &i, &i, &i, &i );
      v_opnvwk( workin, &gem_handle, workout );

      finished=FALSE;
end

/*---------------------------------------------------*/
your_work()
begin
      finished=TRUE;

end

/*---------------------------------------------------*/
terminate()
begin
      v_clsvwk( gem_handle );
      appl_exit();
end
```

ANTIC CLASSIFIEDS

SOFTWARE

ATARI 8-BIT & ST best PD software for your Atari. 150+ disks total to choose from! Only $5.00 ea. Catalog with SASE. Specify ST or 8-Bit PLEASE! Gator-Soft, Box 1215, Gainesville, FL 32602.

Public Domain Library of Software
See THE CATALOG in this issue.

ROBOTICS: Super Differential-Gear clutch units, Cputr Eng'rg library, Test equip. SASE. Cohen 200 Woodside Winthrop, MA 02152

$ ATARI—DATA ACQUISITION 56 in/ 56 out channels.. $149, INSTRUMENT READER..$49, 120V control box..$38, TEMP SENSOR..$18 Info SASE:IPM, BOX 23123, MPLS.,MN 55423

FOR SALE: 3 BASIC 32K GAMES-SOLITREK-Tactical Starship Combat: MAFIA-Organized Crime: Prez-Election Simulation: all 3 $9.95 or send S.A.S.E to RLD: 204 Georgian Drive: Cinnaminson, N.J. 08077 for more info.

The New Testaments of The Bible on Disk
Send S.A.S.E. for information to:
Computers As Tutors
325 May Ct. Mt. Zion, IL 62549

Missing back issues of ANTIC?
Write us at ANTIC, 544 Second Street S.F., 94107 or see THE CATALOG in this issue.

TIRED OF PAYING $30-$40 EACH FOR QUALITY GAMES? WE HAVE THE SOLUTION. FOUR NEW 1987 RELEASES SHIPPED TO YOU FOR ONLY $18 PLUS $2 SHIPPING: EGGBERT, TENTHOUSAND, BOWLING AND CAR-O-RAMA. FOR THE ATARI 800, 800XL, 130XE. DISK BASED. SEND TODAY TO: QUALITY 44049 YORKSHIRE CANTON MI. 48187. YOU'LL BE GLAD YOU DID!

AMAZING ATARI PUBLIC DOMAIN SOFTWARE! Over 110 low cost Theme Disks available, or pick programs you want. Send for free 8-bit Catalog Disk. BELLCOM, Box 1043-A, Peterborough, Ontario, Canada K9J 7A5.

An Ad In Antic Reaches More Than 100,000 Serious Atari Users.

Classifieds

BUY-SELL-TRADE-SWAP IN THE CLASSIES

Antic Classifieds

Classified Manager, Antic-The Atari Resource
544 Second Street, San Francisco, CA 94107
Telephone (415) 957-0886

Name ____________ Company ____________

Address ____________ Phone ____________

City/State/Zip ____________

MasterCharge/Visa Number ____________ Expiration Date ____________

Signature ____________ Issue(s) Ad To Appear ____________

Enclosed is my payment for $ ____________.

NON-COMMERCIAL RATE: $15.00 per line—three (3) line minimum.
COMMERCIAL RATE: $25.00 per line—four (4) line minimum.
BOLDFACE: Add $7.50 per line for boldface words or add $40.00 for the entire ad set in boldface (any number of lines).
TERMS: Prepayment is required. Check, Money Order, Visa or MasterCard is accepted. Make check payable to Antic Publishing.
FORMS: Ads are subject to publisher's approval and **must be TYPED.** One line equals 40 letters and spaces between words. Please underline words to be set in boldface.
GENERAL INFORMATION: Advertisers using Post Office Box numbers in their ads must supply permanent address and telephone numbers. Ad will appear in the next available issue after receipt.
DEADLINE: 90 days prior to cover date (e.g., October 1987 closes July 1, 1987—October issue on sale September 1, 1987).
Clip this coupon, attach to typewritten copy and send with remittance to address above.
HANDWRITTEN COPY WILL NOT BE ACCEPTED.

MOVING?

Don't Forget Us!

☐ **I am also a STart subscriber.**

New Address:

Name ______________________

Address ______________________

City ______________________

State ______________________

Zip ______________________

Place current address label here.

Fill in coupon and mail to:

Antic
P.O. Box 1919
Marion OH
43306

Advertisers List

Be sure to mention ANTIC when contacting these advertisers—all of whom support the Atari computer.

	READER SERVICE NO.	PAGE NO.
ALPHA PRODUCTS	**072**	40
AMERICAN T.V.	**003**	48
ANTIC		18,34,82,95
COMPUTER MAIL ORDER	**011**	8,9
COMPUTER SPECTRUM	**013**	11
COMPWARE	**073**	96
COVOX	**014**	65
DIGITAL VISION	**074**	40
ELECTRONIC ONE	**018**	65
G.E.I.S.C.O.		10
JESSE JONES		37
LURIE	**080**	13
LYCO COMPUTERS	**024**	5,62,63
MAD SCIENTIST	**027**	96
PROTECTO	**034**	32,33,54,55
S & S WHOLESALERS	**041**	16,17
SOFTWARE DISCOUNTERS	**039**	41
SPARRY SOFTWARE	**087**	96
SUBLOGIC	**047**	99
TEVEX	**058**	44
TWENTY FIFTH CENTURY	**088**	23
WHITE HOUSE COMPUTERS	**059**	2

ST Advertisers List

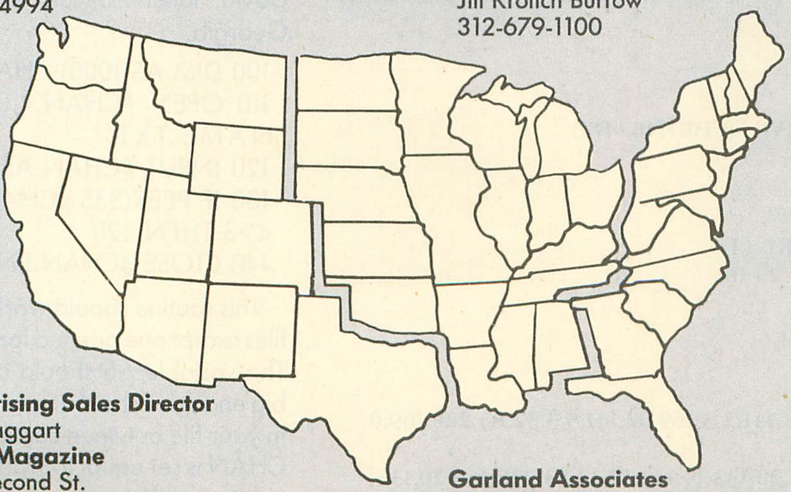
This list is provided as a courtesy to our advertisers. ANTIC does not guarantee accuracy or comprehensiveness.

	READER SERVICE NO.	PAGE NO.
ABACUS	**001**	3
ABBY'S	**070**	67
BECKMEYER DEVELOPMENT	**005**	94
CENTRAL POINT	**010**	31
COMPUTER CROSSWARE	**009**	56
COMPUTER CREATIONS	**008**	53
DISCLONE	**075**	48
DUPLICATION TECHNOLOGY	**076**	41
ECHO DATA		48
EIDERSOFT	**077**	12
HYBRID ARTS	**089**	15
LOOKING GLASS SOFTWARE	**079**	25
MEGAMAX	**032**	78
MICHTRON	**028**	BACK COVER
MICROTYME	**031**	81
MIDISOFT	**081**	31
MILES COMPUTING	**045**	7
NO FRILLS SOFTWARE	**082**	96
SCORPIO SYSTEMS	**085**	65
SOFTLOGIK	**033**	74
ST PLUS	**055**	96
STARSOFT DEVELOPMENT	**056**	13
TDI SOFTWARE	**057**	72
XLENT	**065**	56

Advertising Sales

Phoebe Thompson Associates
Phoebe Thompson
408-356-4994

The Pattis Group
Jill Krotich Burrow
312-679-1100



Advertising Sales Director
John Taggart
Antic Magazine
544 Second St.
San Francisco, CA 94107
(415) 957-0886

Garland Associates
Peter Hardy
617-749-5852

Phoebe Thompson Associates
15640 Gardenia Way
Los Gatos, CA 95030
PHOEBE THOMPSON
408-356-4994

The Pattis Group
4761 W. Touhy Ave.
Lincolnwood, IL 60646
JILL KROTICH BURROW
312-679-1100

Garland Associates
10 Industrial Park Rd.
Hingham, MA 02043
PETER HARDY
617-749-5852

Address all advertising materials to:
Katherine Murphy
Advertising Production Coordinator
Antic Magazine
544 Second Street
San Francisco, CA 94107

COLDSTART IN BASIC

The following three shorties from Fred Olivas appeared in recent issues of the Santa Barbara Atari Computer Enthusiasts newsletter. You may have seen these tips before, but they are worth repeating.

Whenever you want to simulate a coldstart (reboot the disk) in your own BASIC programs, use this statement:

```
X=USR(52487)
```

COLDSTART FROM RESET

If you would like your computer to reboot when [RESET] is pressed, use one of the following in your BASIC program:

```
X=USR(61783) or POKE 580,1
```

NO QUESTION ?

If you would like an INPUT statement not to give the annoying "?" try this:

```
100 ? "ENTER NAME: ";:INPUT #16,N$
```

ROM AND BASIC TEST

Some of us are still confused as to which versions of the graphics chip, ROM chip and BASIC are in our computer. The following program sent in by James Keho of Glendale, Arizona will end the confusion.

```
100 DIM R$(1),B$(1)
115 POKE 53278,0:GRAPHICS 18
120 POKE 53248,0:POSITION 1,3:? *6;"THIS ATARI HAS THE:"
125 POSITION 4,5:? #6;CHR$(71-PEEK(53252));"TIA CHIP"
130 IF PEEK(58383)=0 THEN 150
140 R$="A":GOTO 180
150 R$="B"
180 ? #6;"   OS ROM VER.   ";R$
190 P=PEEK(43234):IF P=162 THEN B$="A"
200 IF P=96 THEN B$="B"
210 IF P=234 THEN B$="C"
220 ? #6;" BASIC VER. ";B$
230 GOTO 230
```

If you have a Tech Tip that you would like to share with other readers, send it along to Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. You might get your name in print. We always welcome very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.

DRIVE SPEED CHECK

If you are experiencing disk errors, your disk drive may not be operating at the correct speed. Atari disk drives normally run at about 288 RPM. If yours varies by more than three RPM from this figure, you should have your disk drive adjusted. The following program is a shortened version of one we have seen credited to the July 1985 newsletter of the San Diego Computer Enthusiasts.

```
10 DR=1:DIM DR$(6):DR$="D1:**"
20 XIO 3,#2,4,0,DR$:POKE 764,255
30 ? CHR$(125);"INSERT DISK IN DRIVE ";CHR$(48+DR)
40 ? " AND PRESS ANY KEY. . ."
50 IF PEEK(764)=255 THEN 50
60 ? :? "PRESS [RESET] TO END. . ."
70 FOR I=1536 TO 1627:READ D:POKE I,D
80 NEXT I:POKE 1537,DR:GRAPHICS 2+16
90 X=USR(1536)
100 SP=PEEK(1662)+PEEK(1663)*256
110 SP=INT(24*3600/SP+0.5)
120 POSITION 0,5:? *6,SP:GOTO 90
200 DATA 169,0,141,1,3,141,11,3,169,82,141,2,3,169,62,141,5,3,32,83,228,169,0,
141,4,3,141,128,6,141
210 DATA 10,3,141,129,6,141,130,6,133,20,133,19,133,18,32,83,228,166,20,138,
237,128,6,142,128,6,16,2,105,255
220 DATA 174,129,6,201,18,48,1,232,232,138,201,24,16,6,142,129,6,76,44,6,165,
19,141,127,6,165,20,141,126,6,104,96
```

FILE READER

Here's a routine that will allow you to read disk files without having to TRAP the end-of-file error. It was sent in by David Tallent of Stone Mountain, Georgia.

```
100 DIM A$(1000):CHAN=3
110 OPEN #CHAN,4,0, "D:FILE-
NAME.TXT"
120 INPUT #CHAN,A$:PRINT A$
130 IF PEEK(835+CHAN*16)
<>3 THEN 120
140 CLOSE #CHAN:END
```

This routine should work for all text files except one opened for a directory. The variable A$ should be DIMmed big enough to hold any amount of text in your file between carriage returns. CHAN is set equal to whatever channel you wish to use.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **184** ON THE READER SERVICE CARD.



• Flight Simulator II
• Scenery Disks

The Challenge of Accomplished Flight

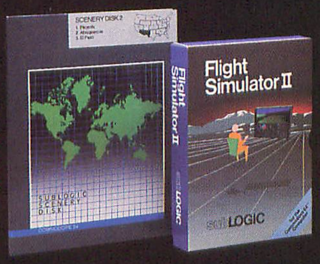
With a realism comparable to (and in some ways even surpassing) $100,000 aircraft flight simulators, Flight Simulator II includes full flight instrumentation and avionics, and provides a full-color out-the-window view. Instruments are arranged in the format standard to modern aircraft. All the radios needed for IFR flight are included. Front, rear, left, right, and diagonal views let you look in any direction. Program features are clearly documented in a 96-page Pilot's Operating Handbook.

For training in proper flight techniques, Flight Simulator II includes another 96-page instruction manual, compiled by two professional flight instructors with over 8,000 hours flight time and 12,000 hours of aviation teaching experience. You'll learn correct FAA-recommended flight procedures, from basic aircraft control through instrument approaches. To reward your accomplishments, the manual even includes a section on aerobatic maneuvers.

The Realism and Beauty of Flight

Go sight-seeing over detailed, realistic United States scenery. High-speed graphic drivers provide an animated out-the-window view in either day, dusk, or night flying modes.

Flight Simulator II features over 80 airports in four different scenery areas: New York, Chicago, Seattle, and Los Angeles. Additional Scenery Disks covering much of the United States are now available for all computer versions of Flight Simulator II.



Each disk covers a geographical region of the country in detail, and is very reasonably priced.

The Pure Fun of "World War I Ace"

When you think you're ready, you can test your flying skills with the "World War I Ace" aerial battle game. This game sends you on a bombing run over heavily-defended enemy territory. Six enemy fighters will attempt to engage you in combat as soon as war is declared. Your aircraft can carry five bombs, and your machine guns are loaded with 100 rounds of ammunition.

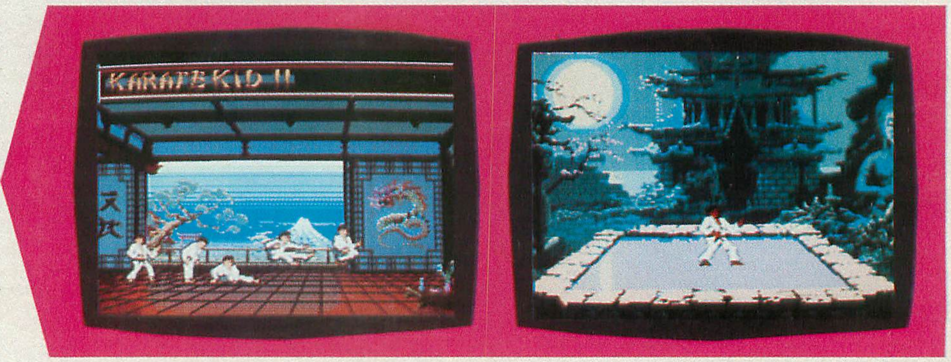
See Your Dealer. Flight Simulator II is available on disk for the Apple II, Atari 800/XL/XE, and Commodore 64/128 computers for $49.95. Additional Scenery Disks are $19.95 each. A complete Western U.S. Scenery six-disk set is also available for $99.95. For additional product or ordering information, call (800) 637-4983.

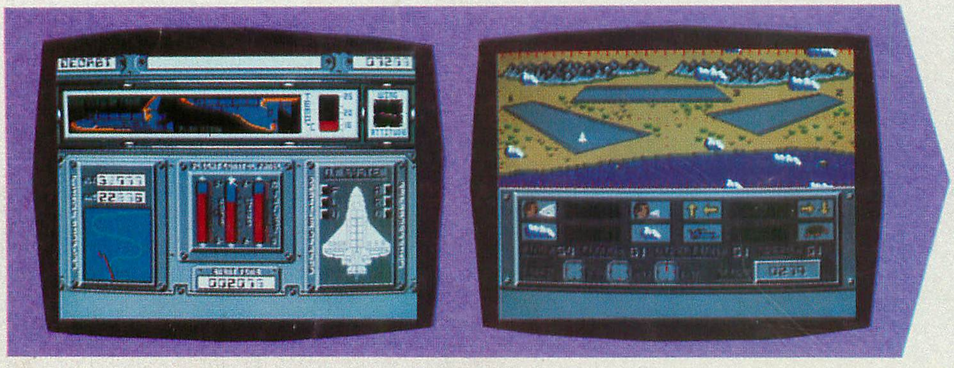
subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995
ORDER LINE: (800) 637-4983
(except in Illinois, Alaska and Hawaii)
Open 7 AM to 9 PM Central Time

STIMULATION
FROM THE WORLD'S LARGEST ST PUBLISHER

STupendous!

Karate Kid Part II
Guide Daniel through fight after fight against ever more powerful advesaries. Then face the evil Chozen himself in the Castle of King Shohashi, where you must discover the secret of the drum - or die! But the fighting isn't all: Catch flies with chopsticks and break ice with your bare hand in full-color, animated graphic sequences. Daniel LaRusso faced the challenge and became a hero. What will you do?
Color only. $39.95





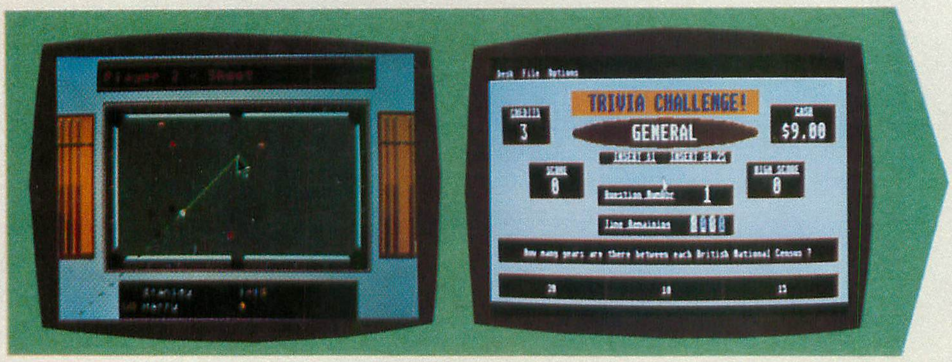
STaggering!

Shuttle II
It's the 1990's and this new Shuttle can take off and fly with the minimum of controls. Decide the launch and landing details then take the seat of Flight Commander for liftoff. Find a fualty Satelite and go out with your jet pack and haul it in. Then return to Earth. Can you keep from burning up? Can you land without crashing? Find out now in this fantastic simulation!
Color only. $39.95

STunning

Pinball Factory
Play great pinball and even design your own screens. Place tabs, bumpers, and ball traps to get the action just right, then use the powerful drawing system to put in the walls. Add flair with a graphic logo. You can even set the scoring, gravity, speed and elasticity! Play the best pinball game you can imagine! .There are even tilt controls to let you "bump" the machine!
Color only. $39.95





STriking!

Eight Ball
The poolhall favorite is here! Realistic graphics and ingeniously simple mouse control make this one a sure bet.
Color or Monochrome. $29.95

Trivia Challenge
Nearly 4000 questions on International Sport, The Arts, Pop Music, Science and General knowledge. Arcade style play keeps the game quick. You can even put in your own questions!
Color or Monochrome. $39.95

Dealer inquiries welcome • Visa and Mastercard accepted • Add $3.00 shipping and handling to each order.

MichTron

576 S. Telegraph, Pontiac, MI 48053
Orders and Information (313) 334-5700

CIRCLE 028 ON READER SERVICE CARD